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ABSTRACT

In most educational literature, the subject of costs has been isolated from curriculum, personnel, and program effectiveness. A dichotomy has existed between fiscal and curricular decision-making. The Resource Cost Model (RCM) was designed to help policymakers measure to what extent differences in the costs of educational services are attributable to price variations in comparable resources, students' programmatic needs, and the scale of school and district operations. The model has proved helpful at the national, state, and local levels. Although RCM was originally conceived as a purely technical model, it has great potential for bringing educators, resource management staff, and educational policymakers together to consider the most effective allocation of available resources. This report summarizes discoveries about cost models for education over the last 5 years, focusing on processes and procedures. Specifically, the report discusses applications of the RCM at all administrative levels and compares and contrasts the nature of these applications. Also explored are differences in goals, implementation processes, and linkages between applications at different levels. The report also describes how the RCM fits into the broader context of strategic planning and introduces a prototype RCM database that may be used to expedite implementation processes. The RCM process succeeds by forcing competing and complementary program needs and interests to be considered in relation to one another. The document includes 64 references and 8 tables. A sample strategic planning program plan is appended. (MLH)

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THE RCM AS A DECISION MAKING PROCESS

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July 1986

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ABSTRACT

In most of the educational literature, the subject of costs has been isolated from curriculum, personnel, and program effectiveness. Cost anlysis is usually viewed as a problem for accountants, while the other subjects are relegated to educators and educational evaluators. There has long existed a dichotomy in both educational research and practice between fiscal and curricular decision making. However, when it comes to improving the quality of decision making about programs, school closure, or budgeting and future planning for service delivery, it would seem essential that curricular and fiscal policy proponents come together.

Over the past few years, the IFG has been involved in research on educational cost models. The purpose of this research has been to develop a solid foundation for state and local school decision making. Out of this work has evolved the Resource Cost Model (RCM). The RCM is first and foremost a cost model designed to help policy makers assess the extent to which differences in the costs of educational services are attributable to variations in the prices paid for comparable resources, students' programmatic needs, and scale of school and district operations.

Since its development as a comprehensive cost model for educational services, the RCM has been used to assist educational policy makers at the national, state and local levels. At the national level it is currently serving as the basis for a major, Congressionally-mandated national effort to measure expenditures on special education programs and services across the nation. It has been used in Illinois and Alaska as the basis for major

school finance reform projects and in California and Connecticut to analyze expenditure patterns across selected sets of publicly funded educational programs. At the school district level, it has been piloted as a program planning and budgeting system.

When the RCM was initially introduced as an approach to the development of cost based school finance systems, it was envisioned as a purely technical model for this purpose. The RCM was seen as a technical structure for organizing cost and resource information about educational delivery systems. It was supported by computer software designed to cost out educational programs and services. Although a certain amount of interaction with educational professionals was anticipated for the purpose of gathering data about educational delivery systems, this interaction was conceived of as a perfunctory exercise.

However, as the development of the RCM methodology proceeded it became clear that because of the kinds of questions and data being gathered, the RCM needed to provide a mechanism for decision making. The RCM was becoming a process for decision making as well as a technical cost model. Over the course of the few years that followed the first state school finance project using the RCM approach in Illinois, the RCM "Process" evolved as a way of drawing on the expertise of fiscal and curriculum people at the state and local level. It brought these respective individuals together in a decision making context. These two groups represent the benefit (curricular outcomes) and cost (fiscal) sides of educational decision making. The RCM decision making process evolved as a separate structure for organizing the human resources within an organization to develop the RCM database and to make decisions about programs and funding based on the cost analyses derived from the technical structure of the model.

As the RCM has been applied to a variety of decision making contexts over the last few years, much has been learned about both the technical and decision making sides of the approach. Applying the RCM in different contexts requires different emphases on the process components.

The purpose of this report is to bring together all that we have learned about cost models for educational decision making over the last five years with an emphasis on processes and procedures. While we will focus on the specific applications of the RCM, we believe that there are many general lessons that might be extracted from our experiences. Specifically, this report will discuss the applications of the RCM at the Federal, state and local levels and will compare and contrast the nature of these applications. We will explore differences in the goals of different applications, the processes of implementation, and the linkages between these applications at different levels. We also describes how the RCM fits into the broader context of strategic planning. Finally, we will introduce a prototype RCM database which may be used to expedite implementation processes.

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To Velma Elliott, we owe many thanks for her contributions and assistance in the implementation of our field test in the Alameda Unified School District. We learned much from her about how the model and related processes would need to be revised for implementation. Her organizational skills increased the clarity of the tasks we needed to accomplish and reduced the amount of time in which they were completed.

We would also like to express our appreciation to Dr. John Searles, the Superintendent in Alameda Unified school District, for his willingness to take a big risk in allowing us to intrude on the district in order to field test the RCM concepts. Thanks also to the members of the Alameda Board of Education who were willing to follow Dr. Searles recommendation to permit the field test and to the many staff members who have spent so many hours working on our behalf on the project. Among those staff members we must mention Nick O'Donnel, Linda Nelson, John Healy, Gretchen Wheelwright, Paul Erikson, Jeff Cooper, Chuck Tudor, Jeff Daley,

Betty Takano, Karen Folrath and Sue Yong.

As we look back a few years, there are also a number of individuals who contributed to the earlier work done on the state projects using the RCM. We thank Bill Hartman of the University of Oregon who stimulated our initial interest in the RCM appraoch as a tool for cost analysis and who was involved in the earliest development as we began to think about the use of the model in finance and budgeting applications.

We are most grateful to Suzanne Langston who was the School Finance Project Director for the Illinois State Board of Education and who has almost taken on the RCM approach to school finance as a cause. Whatever success the RCM or cost based funding has in the State of Illinois must be attributed largely to her efforts. We profited significantly from our many hours of dicussion with Suzanne regarding the process and procedures for implementation of the RCM concept during the course of that project. We are also appreciative of Suzanne's counterpart in Alaska, Laraine Glenn, for her effort to make the School Finance Project a success and who helped us improve the quality of the RCM approach.

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District, Terry McHenry of the Oak Grove School District and School Services, Inc., and Mike Kirst of Stanford University.

We would also like to acknowledge the support and encouragement we have received from Professor Henry M. Levin throughout the course of our endeavors over the past five years.

CHAPTER 1

INTRODUCTION

BACKGROUND

In most of the educational literature, the subject of costs has been isolated from curriculum, personnel, and program effectiveness. Cost anlysis is usually viewed as a problem for accountants, while the other subjects are relegated to educators and educational evaluators. There has long existed a dichotomy in both educational research and practice between fiscal and curricular decision making. This dichotomy appears in academia in the way schools of education and educational research institutions are organized, and it is evident in local schol systems in the way fiscal and curricular matters are addressed. In each case separate divisions or departments are established for each function and rarely is there any interaction between the two. The separation is also apparent in local schools in the way each group perceives the role of the other: the curriculum people are often referred to as the "spenders," while the fiscal people are the "cutters."

In some cases this separation is most appropriate and interaction would not likely serve any purpose. However, when it comes to improving the quality of decision making about programs, school closure, or budgeting and future planning for service delivery, it would seem essential that curricular and fiscal policy proponents come together. For example, if a state educational system is going to adequately to meet the needs of a healthy and growing economy and if it the funds are to be equitably distributed to meet the needs of different types of students, then state policy makers need to know what such a system will cost. Likewise, in the face of changes in the availability of resources, policy makers need to know what are the most preferred ways of cutting or augmenting educational programs and resources. With the call for educational reform that include longer school days and years, more use of computers, teacher retraining, and higher teacher salaries, a choice must be made among alternatives within limited budgets.

Over the past few years, the IFG has been involved in research on educational cost models. The purpose of this research has been to develop a solid foundation for state and local school decision making. The work of Dr. Chambers (see bibliographic references for a complete list) has been focused on the development of these types of cost models. Through this work, he has adapted existing cost analysis methodologies to the needs of the educational enterprise. These methods have been used for measuring and assessing variations in cost related to resource price differences, demographic changes in the educational workforce, differences in pupil and programmatic needs, and the scale of school and district operations. Out of this work has evolved the Resource Cost Model (RCM).

Originally what has become known as the RCM was outlined in a dissertation by William Hartman (1979). The RCM was an offshoot of an "ingredients" approach to cost analysis. This initial application by Hartman was designed to estimate the costs to the nation of implementing PL94-142, the Education for All Handicapped Childrens' Act of 1975. Hartman (1983) also applied the RCM to the development of a local Special Education Planning Model (SEPM) and Hartman and Chambers (1983) collaborated on how the RCM might be extended to form a foundation for financing of special education.

Chambers and Parrish (1983) extended the RCM concept to be applied as a comprehensive approach to state school finance and planning. The vision of this model was to provide a rational approach to funding of educational services that would recognize the various sources of differences in the costs of educational services. The RCM is first and foremost a cost model designed to help policy makers assess the extent to which differences in the costs of educational services are attributable to variations in the prices paid for comparable resources, students' programmatic needs, and scale of school and district operations.

Since its development as a comprehensive cost model for educational services, the RCM has been used to assist educational policy makers at the national, state and local levels. At the national level it is currently serving as the basis for a major, Congressionally-mandated national effort to measure expenditures on special education programs and services across the nation. It has been used in Illinois and Alaska as the basis for major school finance reform projects and in California and Connecticut to analyze expenditure patterns across selected sets of publicly funded educational programs. At the school district level, it has been piloted as a program planning and budgeting system.

When the RCM was initially introduced as an approach to the development of cost based school finance systems, it was envisioned as a purely technical model for this purpose. The RCM was seen as a technical structure for organizing cost and resource information about educational delivery systems. It was supported by computer software designed cost out educational programs and services. Although a certain amount of interaction with educational professionals was anticipated for the purpose of gathering data about educational delivery systems, this interaction was conceived of as a perfunctory exercise. This is not to trivialize the process of specifying the resource requirements for educational delivery systems, but rather to emphasize that the political aspects of gathering information about the delivery of educational services was not fully recognized by those of us involved in the development of the RCM.

Our first application of the RCM concept to the School Finance Reform project in Illinois changed our views substantially. As a result of our first encounters with the educational professionals involved in the Illinois project, we began to recognize the importance of the political decisions that were to be made to define standards of educational service delivery. Standards of service are not objective, but rather subjective, in nature. They are derived within a political context reflecting the priorities and preferences of the society in which they are established. Moreover, they are derived within the economic limitations of scarce resources and the relative costs of alternative uses of those resources. Although the subjective nature of adequacy and equity in educational finance was implicitly built into the technical side of the RCM, it was becoming increasingly clear as a result of the experience in Illinois that there needed to be some way of organizing the political forces operating within the State to address the questions being raised by the RCM data collection.

The RCM was making its first step beyond being just a technical cost model. Because of the kinds of questions and data being gathered, the RCM needed to provide a mechanism for decision making. The RCM was becoming a process for decision making as well as a technical cost model. Over the course of the few years that followed the initiation of the Illinois project, the RCM "Process" evolved as a way of drawing on the expertise of fiscal and curriculum people at the state and local level. It brought these respective individuals together in a decision making context. These two groups represent the benefit (curricular outcomes) and cost (fiscal) sides of educational decision making. The RCM decision making process evolved as a separate structure for organizing the human resources within an organization to develop the RCM database and to make decisions about programs and funding based on the cost analyses derived from the technical structure of the model.

As the RCM has been applied to a variety of decision making contexts over the last few years, much has been learned about both the technical and decision making sides of the approach. Applying the RCM in different contexts requires different emphases on the process components.

PURPOSE AND ORGANIZATION OF THIS REPORT

The purpose of this report is to bring together all that we have learned about cost models for educational decision making over the last five years. While we will focus on the specific applications of the RCM, we believe that there are many general lessons that might be extracted from our experiences. Specifically, this report will discuss the applications of the RCM at the Federal, state and local levels and will compare and contrast the nature of these applications. We will explore differences in the goals of different applications, the processes of implementation, and the linkages between these applications at different levels. We also describes how the RCM fits into the broader context of strategic planning. Finally, we will introduce a prototype RCM database which may be used to expedite implementation processes.

Chapter 2 of this report contains an overview of the technical elements of the RCM. It is intended to highlight the essential elements of database development and analysis for which the RCM is designed. Samples of RCM outputs are included in the Chapter.

Chapter 3 describes how the RCM has been applied in recent studies and our experiences with implementation of the decision making components of the RCM. The RCM has been applied to state, federal and local cost analyses underlying everything from state school finance applications, expenditure analysis, and budgeting and planning applications. The Illinois and Alaska school finance projects are reviewed along with applicatons to expenditure analyses in Connecticut and California. A larger federal application to special education expenditures across the nation is also discussed.

Chapter 4 represents the results of the review of our previous experiences with implementation of the RCM. It reflects our latest thinking on the implementation of the RCM and draws heavily on the lessons we learned in the early studies.

Chapter 5 elaborates on strategic planning and the implementation of the RCM. Strategic planning is a broader context of educational decision making within which we feel the RCM fits. The concept of strategic planning is first introduced in Chapter 4, while Chapter 5 is a more detailed discussion of what strategic planning is and how the RCM fits into this broader scheme.

Chapter 6 is a detailed discussion of the prototype RCM database. The prototype database is described briefly in Chapter

4. Chapter 6 offers a more complete description of the development and utilization of the prototype RCM database in the implementation process.

Chapter 7 is contains a brief summary and some concluding remarks.

CHAPTER 2

TECHNICAL ELEMENTS OF THE RCM: AN OVERVIEW

INTRODUCTION

The RCM addresses a common difficulty facing educational policy makers: the problem of tracking resource allocations to individual educational programs and services. In most cases, little is known about expenditure patterns at this level of detail and thus the real costs of providing individual educational programs and services. Such information can be critical to policy makers in a variety of contexts and are especially pertinent to budgeting and planning issues, cost projections and the derivation of cost standards for funding purposes.

The RCM System can be used to measure expenditure levels by program and to simulate the cost implications of providing alternative sets of services or the same services in different ways. These cost projections, considered in a cost effectiveness or cost utility decision making framework, allow program funding decisions to be based on determinations of actual program costs and needs. The RCM System is designed to assist such educational decision makers as school administrators, local and state school board members, state and federal policy analysts, and legislators.

TECHNICAL ELEMENTS OF THE RCM

Let us begin by outlining the technical elements of the RCM. These technical elements include the development of the RCM database and the structure of the computer software package that supports the model. Essentially, the RCM is an "ingredients" approach to determining the cost of educational programs. This involves three steps: LISTING a uniform set of educational programs, DETERMINING the specific resources needed for each of these programs, and attaching prices to each of these resources to determine specific program costs. The overall cost of education is determined on the basis of these programmatic standards and the number of pupils enrolled in each program.

The technical steps in this simulation process are illustrated in Figure 2-1. In Box 1, standards of educational service are established in terms of resource requirements for the various programs. For example, the allocation of personnel time (e.g., teachers and administrators) and allocations of supplies, materials and capital equipment are specified for each program by designated program experts. By combining these resource configurations (Box 1) with enrollment data by program (Box 2), the quantities of resources required to provide this program for an entire school or school district can be determined. Through the multiplication of these resource quantities by their local prices, educational costs can be calculated for each school or district via the RCM computer simulation model (Box 4). The simulation model produces cost information by program (Box 5) as well as cost data by school and/or school district (Box 6).

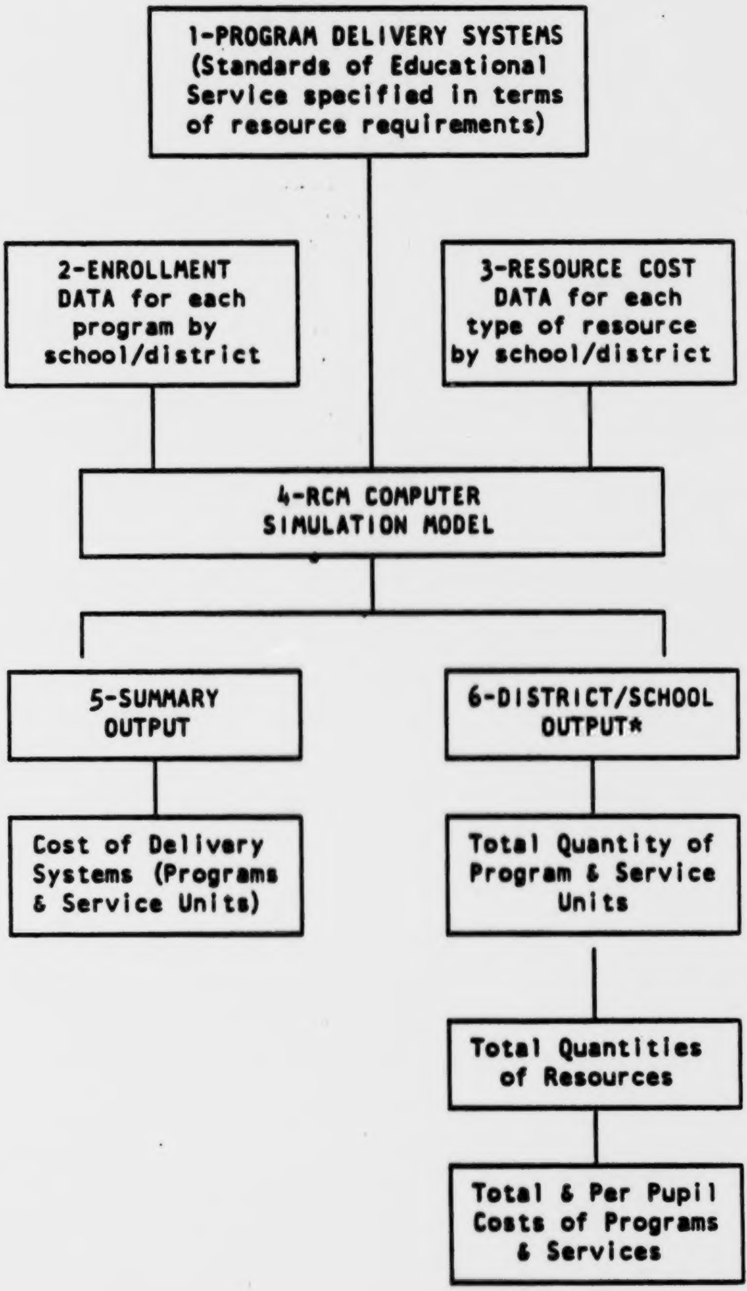
The distinctive feature of the RCM approach is in its emphasis on delivery systems. The term "program" used in the RCM refers to a delivery system: a set of resources specified within a given unit of service delivery. The units of service delivery themselves are generally defined to represent fairly specific activities organized at a relatively small level. We expect to find similar units in other enterprises exhibiting similar objectives and overall ranges of size. While variations in the sizes of the individual units are expected to be observed across agencies, the units themselves are defined so as to limit the range of size observed and the types of resources required.

Examples of educational programs would include a 5th grade self-contained classroom, basic high school English, speech therapy. Despite differences in class sizes across agencies, there is a great deal of similarity in the resources required to provide these various types of educational programs or services to students. Figure 2-2 shows an example of what elements are included in the specification of an educational program delivery system.

While FIGURE 2-2 provides an example of what the delivery system input looks like for the RCM, FIGURES 2-3 to 2-6 offer examples of the kind of output generated by the RCM computer software. The purpose for displaying these examples is to provide the reader with a firmer grasp of the nature of the information with which we are dealing in the context of the RCM. It provides a clearer illustration of what is meant by a "program." FIGURE 2-3 provides a sample profile of programs and services to which a particular pupil is subject. This profile represents the complete set of programs and services that account for the educational experiences of a given student along with the administrative and support services required to provide those direct services.<1> Underlying the cost figures for each program or service included on the student profile are detailed delineations of the delivery system resource requirements.

FIGURE 2-1

FLOW DIAGRAM OF THE RCM COMPUTER SOFTWARE


1-PROGRAM DELIVERY SYSTEMS (Standards of Educational Service specified in terms of resource requirements)
2-ENROLLMENT DATA for each program by school/district
3-RESOURCE COST DATA for each type of resource by school/district
4-RCM COMPUTER SIMULATION MODEL
5-SUMMARY OUTPUT
6-DISTRICT/SCHOOL OUTPUT*
Cost of Delivery Systems (Programs & Service Units)
Total Quantity of Program & Service Units
Total Quantities of Resources
Total & Per Pupil Costs of Programs & Services

*This district level output is reported in the form of totals as well as by program, program category, school type, and district administrative and support service category.

FIGURE 2-2

SAMPLE WORKSHEET FOR PROGRAM DELIVERY SYSTEM

Rec Type		DESCRIPTION	CATEGORY CODE	PROGRAM NAME
0	PROGRAM CATEGORY....	REGULAR HIGH SCHOOL	03	RH_CAT

RCM WORKSHEET A - 1

INSTRUCTIONAL PROGRAMS OR STUDENT SERVICES

Rec Type		PROGRAM DESCRIPTION	CATEGORY CODE	PROGRAM CODE	PROGRAM NAME	SCH CAT CODE
1	PROGRAM............	COMPUTER SCI I, GRDS 9-12	03	131	RH_CSCI	—

		UNITS OF MEASURE*	MINIMUM	TARGET OR CASELOAD	MAXIMUM	MINIMUM NO. SEC. REQD.	CAPITAL ADJUSTMENT
2	PROGRAM SIZE..............................	1	24	28	35	1	No

	RESOURCE REQUIREMENTS: DESCRIPTION	OBJECT CODE	UNITS OF MEASURE**	MINIMUM	TARGET OR CASELOAD	MAXIMUM	UNIT COST	FOR CAPITAL RES YRS OF LIFE	FOR CAPITAL RES REPLCMNT RATE	SECTIONS SHARING CAPITAL
3	CLASSROOM TEACHER	1110	101			.20				
4	INSTRUCTIONAL AIDE	2110	102	0	0	90				
5	SET OF TEXTBOOKS	4110	302			35	$ 15			
6	INSTR SUPPLIES/STUDENT	4310	302	24	28	35	$ 2			
7	BASIC FURNISHINGS	6510	301			$3,500		10	.05	5
8	COMPUTERS	6510	302			20	$2,700	5		5
9	DOT MATRIX PRINTER	6510	302			6	$ 600	5		5
10	LETTER QUALITY PRINTER	6510	302			1	$1,800	5		5

*UNITS OF MEASURE FOR PROGRAM SIZE:

1=# of Pupils
2=FTE Teachers
3=FTE Cert Pers
4=FTE Clsf Pers
5=Total FTE Pers
6=# of Schools
7=Sq Ft Bldg
11=# of Mtgs/Yr
12=# Wrk Stations
13=# of Babies
14=# of Credits
15=# Pupil Hrs/Day
21=# of Meals/Day
22=FTE Pupils
25=# Identfd Pupils
45=# of Sch Dist

**UNITS OF MEASURE FOR RESOURCES:

PERSONNEL:
101=Annual FTE
102=Hours/Year
103=Days/Year
104=Weeks/Year
105=Months/Year
109=Spec Service

EXPENDABLES:
201=Dollars/Year
202=Quantity/Year

CAPITAL (life >= 2 yrs):
301=Startup Cost
302=Startup Qty

FIGURE 2-3

STUDENT COST PROFILES DERIVED FROM RCM COST ANALYSIS

CATEGORY CODE	SERVICE CODE	DESCRIPTION OF PROGRAM OR SERVICE	PER PUPIL COSTS OF SERVICES BY TYPE OF STUDENT REG 3RD GR PUPIL	 REG 3RD GR W/ SPEECH	 REG HIGH SCH PUPIL	 HIGH SCH W/ BUS. CRS
INSTRUCTIONAL PROGRAMS AND RELATED SERVICES						
01-3-101	000-04	Self-Contained 1-3	$1,160	$1,160	.	.
01-3-101	000-11	Elementary Music K-5	$14	$14	.	.
03-5-101	128-08	English 2G	.	.	$225	$225
03-5-101	150-05-23	Spanish II	.	.	$234	$234
03-5-101	190-14-23	Geometry - EHS (1yr)	.	.	$205	$205
03-5-101	230-01	Physical Education	.	.	$307	$307
03-5-101	235-14-23	Health - EHS	.	.	$262	.
03-5-101	250-03-23	Modern World History (2CP + 2G) EHS	.	.	$249	.
05-2-300	312-01	Speech Therapy	.	$352	.	.
13-5-509	115-01-23	Accounting	.	.	.	$303
13-5-509	115-03-23	Intermediate Typing	.	.	.	$256
TOTAL COST, INSTRUCTIONAL PROGRAMS AND RELATED SERVICES:			$1,174	$1,526	$1,482	$1,530
SCHOOL ADMINISTRATION AND SUPPORT SERVICES						
01-3-490		Elementary School (Genl Adm)	$355	$355	.	.
01-3-490	470	Elementary Library	$60	$60	.	.
03-5-490	470	High School - Library	.	.	$47	$47
03-5-490	490-23	High School--Genl Admin--EHS	.	.	$619	$619
TOTAL COST, SCHOOL ADMINISTRATION AND SUPPORT SERVICES:			$415	$415	$666	$666
PROGRAM ADMINISTRATION AND SUPPORT SERVICES						
05-2-300		Special Ed. General	.	$846	.	.
TOTAL COST, PROGRAM ADMINISTRATION AND SUPPORT SERVICES:			$0	$846	$0	$0
DISTRICT ADMINISTRATION AND SUPPORT SERVICES						
01-9-710		Gen. District Admin.	$23	$23	$23	$23
01-9-810		Community Services	$1	$1	$1	$1
02-9-725		Business/Fiscal- Business Services	$68	$68	$68	$68
02-9-725	726	Business/Fiscal - District Wide	$218	$218	$218	$218
03-9-719		Personnel	$22	$22	$22	$22
04-9-425		Educational Services	$22	$22	$22	$22
04-9-425	163	P.E./ Ath / Health / Safety	$5	$5	$5	$5
04-9-425	440	Educ. Ser.--Cur. Dev./Inserv	$17	$17	$17	$17
04-9-425	471-01	Educ. Ser. T.R.C.	$18	$18	$18	$18
04-9-425	471-02	Educ. Ser.- Testing	$2	$2	$2	$2
04-9-425	733	Educ. Ser. Duplicating	$2	$2	$2	$2
04-9-526	526-02	Chapter II	$8	$8	$8	$8
05-9-692		Pupil Personnel Services	$12	$12	$12	$12
05-9-692	630	Pupil Pers--Psych. Servs	$21	$21	$21	$21
05-9-692	640	Pupil Pers--Health Srvs	$22	$22	$22	$22
06-9-750		Maintenance & Operations	$122	$122	$122	$122
06-9-775	001	District Utilities - Water	$7	$7	$7	$7
06-9-775	002	District Utilities - Gas	$31	$31	$31	$31
06-9-775	003	District Utilities - Electric	$38	$38	$38	$38
08-9-730		Data Processing	$35	$35	$35	$35
TOTAL COST, DISTRICT ADMINISTRATION AND SUPPORT SERVICES:			$694	$694	$694	$694
TOTAL COST OF EDUCATIONAL SERVICES:			$2,282	$3,481	$2,843	$2,891

The detailed output derived from the technical applications of the RCM include program costs for each program or service delivery system for every designated site or cost center within the jurisdiction covered by the analysis. Figure 2-4 contains RCM output which summarizes the overall costs of services across local sites within a local school district. Figure 2-5 includes costs by program within a given site. Figure 2-6 presents the total costs of one of these programs across all units within a given site or location. Each of these outputs are derived from a single database which allows the user to examine cost data organized along a variety of dimensions and perspectives.

FIGURE 2-4

PROGRAM COST BY SITE

SIMULATION SEQUENCE NO.: 01

TOTAL AND AVERAGE COSTS OF EDUCATIONAL SERVICES
AND THE BREAKDOWN AMONG CLASSES OF SERVICES

SCHOOL ID CODE	SCHOOL/LOCATION	TOTAL ENROLLMENT	TOTAL COST OF EDUCATIONAL SERVICES	AVERAGE COST PER PUPIL	PERCENT INSTRUC COST	PERCENT SCH ADM COST	PERCENT PROG ADM COST	PERCENT DIST ADM COST
DISTRICT: ALAMEDA UNIFIED SCH DISTRICT								
000	DISTRICT TOTALS	8,260	$27,749,919	$3,360	58.22	16.82	3.74	21.22
001	Lincoln Middle School	500	$1,157,719	$2,315	78.90	21.10	0.00	0.00
002	Edison Elementary	370	$593,431	$1,604	77.87	22.13	0.00	0.00
003	Amelia Earhart Elementary	346	$619,744	$1,791	78.88	21.12	0.00	0.00
004	Franklin Elementary	0	$0	$0	0.00	0.00	0.00	0.00
005	Haight Elementary	292	$733,343	$2,511	82.75	17.25	0.00	0.00
006	Mastic School	0	$0	$0	0.00	0.00	0.00	0.00
007	Washington Elementary	333	$792,298	$2,379	83.61	16.39	0.00	0.00
008	Longfellow Elementary	534	$1,094,325	$2,049	73.20	26.80	0.00	0.00
009	Donald D Lum Elementary	559	$975,044	$1,744	69.50	30.50	0.00	0.00
010	Chipman Middle School	610	$1,672,469	$2,742	67.87	32.13	0.00	0.00
011	George P Miller Elementary	416	$677,452	$1,628	80.59	19.41	0.00	0.00
012	Woodstock Elementary	472	$946,106	$2,004	86.08	13.92	0.00	0.00
013	Frank Otis Elementary	294	$689,291	$2,345	81.62	18.38	0.00	0.00
014	Paden Elementary	0	$0	$0	0.00	0.00	0.00	0.00
015	Will C Wood Middle School	702	$2,001,407	$2,851	70.51	29.49	0.00	0.00
016	Woodstock Child Development Ce	242	$547,492	$2,262	100.00	0.00	0.00	0.00
022	Alameda High School	1,287	$3,404,288	$2,645	75.58	24.42	0.00	0.00
023	Encinal High School	1,014	$2,775,446	$2,737	70.15	29.85	0.00	0.00
024	Island High School	267	$400,400	$1,500	65.74	34.26	0.00	0.00
091	Special Education District Wid	0	$892,459	$0	100.00	0.00	0.00	0.00
092	ROP District Wide Programs	0	$421,461	$0	100.00	0.00	0.00	0.00
093	Driver Training,District Wide	0	$46,624	$0	100.00	0.00	0.00	0.00
094	Independent Study,District Wid	20	$31,241	$1,562	100.00	0.00	0.00	0.00
095	Home and Hospital,District Wid	2	$12,827	$6,413	100.00	0.00	0.00	0.00
096	Miscellaneous District Wide Pr	0	$65,325	$0	100.00	0.00	0.00	0.00
101	St Barnebas	0	$264,400	$0	100.00	0.00	0.00	0.00
102	St Joseph	0	$9,600	$0	100.00	0.00	0.00	0.00

FIGURE 2-5

PROGRAM COST BY PROGRAM WITHIN SITE

SIMULATION SEQUENCE NO.: 01

TOTAL AND AVERAGE COSTS FOR PROGRAM AND SERVICES

DISTRICT: ALAMEDA UNIFIED SCH DISTRICT
LOCATION: DISTRICT TOTALS

NAME: DESCRIPTION	CATEGORY CODE:	SERVICE CODE:	TOTAL COST	PER PUPIL COST	# PROGRM UNITS
INSTRUCTIONAL PROGRAMS AND RELATED SERVICES					
RE_EENTK: Early Entry Kindergarten	01-3-101	000-01	$31,943	$550.75	2.00
RE_SCK : Self-Contained Kindergarten	01-3-101	000-02	$766,455	$1,279.56	23.00
RE_SC13 : Self-Contained 1-3	01-3-101	000-04	$1,975,020	$1,159.73	58.00
RE_SC45 : Self-contained 4-5	01-3-101	000-05	$1,192,581	$1,203.41	35.00
RECOMBKS: Combination Class K-5	01-3-101	000-09	$336,463	$1,269.67	10.00
RE_PE45 : Release Time P.E. 4-5	01-3-101	000-10	$360	$0.32	40.00
ELMUS_K5: Elementary Music K-5	01-3-101	000-11	$49,547	$13.87	1.00
MSDRAMA7: Drama 7-8	02-3-101	EDZ0	$13,537	$148.75	4.00
MSDRAMA6: Drama 6	02-3-101	EDZ6	$6,843	$112.19	2.00
MSPUBLC : Publications 7-8	02-3-101	EJP0	$10,276	$107.04	3.00
MSRDLAB : Reading Lab 7-8	02-3-101	ERZ0	$15,768	$213.08	5.00
MSBARDG6: Basic Reading 6	02-3-101	ER60	$26,977	$281.01	4.00
MSACRDG6: Accelerated Reading 6	02-3-101	ER61	$13,473	$220.86	2.00
MSGNRDG6: General Reading 6	02-3-101	ER62	$33,644	$238.61	5.00
MSSCRDG6: Self-Contained Reading 6	02-3-101	ER63	$16,843	$306.23	2.00
MSSCRDGA: Self-Cont. Reading, Accelerated 6	02-3-101	ER65	$16,843	$295.48	2.00
MSMYTH : Mythology	02-3-101	EXM6	$8,421	$290.39	1.00
MSESL68 : ESL 6-8	02-3-101	EXZ0	$6,773	$521.02	1.00
MSBASEN6: Basic English 6	02-3-101	EZ60	$6,942	$187.63	1.00
MSACLEN6: Accelerated English 6	02-3-101	EZ61	$27,733	$229.20	4.00
MS_EZ62 : General Eng./Lang. Arts 6	02-3-101	EZ62	$69,307	$235.74	10.00
MSSCELA6: Self-Contained Eng./Lang. Arts 6	02-3-101	EZ63	$16,843	$306.23	2.00
MSSCENGA: Self-Cont. English, Accelerated 6	02-3-101	EZ65	$16,843	$285.47	2.00
MSBASEN7: Basic English 7	02-3-101	EZ70	$13,879	$301.71	2.00
MSACLEN7: Accelerated English 7	02-3-101	EZ71	$34,688	$218.17	5.00
MS_EZ72 : General Eng./Lang. Arts 7	02-3-101	EZ72	$90,017	$252.86	13.00
MSSCE7C : Self-Contained Eng./Lang.A.7Core	02-3-101	EZ74	$16,955	$706.47	1.00
MSBASEN8: Basic English 8	02-3-101	EZ80	$20,679	$449.54	3.00
MSACLEN8: Accelerated English 8	02-3-101	EZ81	$27,994	$204.34	5.00
MS_EZ82 : General Eng./Lang. Arts 8	02-3-101	EZ82	$97,080	$226.82	14.00
MSSCENG8: Self-Contained Eng./Lang.A.8Core	02-3-101	EZ84	$33,910	$584.66	2.00
MSALG : Alegbra	02-3-101	MA81	$13,335	$196.10	3.00
MSPREALG: Pre Algebra 7-8	02-3-101	MXZ1	$39,579	$244.31	6.00
MSBAMA6 : Basic Math 6	02-3-101	MZ60	$33,058	$330.58	5.00
MSACMAT6: Accelerated Math 6	02-3-101	MZ61	$26,495	$222.65	4.00
MSGMAT6 : General Math 6	02-3-101	MZ62	$59,229	$235.97	9.00
MSSCMA6 : Self-Contained Math 6	02-3-101	MZ63	$16,843	$306.23	2.00
MSSCMAAC: Self-Cont. Math Accelerated 6	02-3-101	MZ65	$16,843	$280.71	2.00
MSBAMA7 : Basic Math 7	02-3-101	MZ70	$26,427	$362.02	4.00
MSACMAT7: Accelerated Math 7	02-3-101	MZ71	$19,870	$223.26	3.00
MSGMAT7 : General Math 7	02-3-101	MZ72	$72,460	$219.58	11.00
MSSCMA7C: Self-Contained Math 7 Core	02-3-101	MZ74	$16,955	$706.47	1.00
MSBAMA8 : Basic Math 8	02-3-101	MZ80	$19,840	$320.00	3.00
MSACMAT8: Accelerated Math 8	02-3-101	MZ81	$6,627	$213.78	1.00
MSGMAT8 : General Math 8	02-3-101	MZ82	$79,087	$212.60	12.00

FIGURE 2-6

SAMPLE PROGRAM BUDGET

FOR SCH_ID=001

* * *

SERVICE DESCRIPTION=Basic English 7

CATEGORY CODE	SERVICE CODE	RESOURCE DESCRIPTION	OBJ CODE	BUDGET	QUANTITY	UNIT OF MEAS.
02-3-101	EZ70	TOTAL BUDGET		$6,934.29	.	.
02-3-101	EZ70	CLASSROOM TEACHER	1110	$6,307.29	0.2	101
02-3-101	EZ70	TEXTBOOKS	4110	$369.00	369.0	301
02-3-101	EZ70	BOOKS OTHER THAN TXTBKS	4210	$123.00	123.0	301
02-3-101	EZ70	INSTRUCTIONAL SUPPLIES	4310	$92.00	92.0	201
02-3-101	EZ70	INSTRTNL EQUIPMNT REPL	6510	$43.00	43.0	301

* * *

SERVICE DESCRIPTION=General Eng./Lang. Arts 7

CATEGORY CODE	SERVICE CODE	RESOURCE DESCRIPTION	OBJ CODE	BUDGET	QUANTITY	UNIT OF MEAS.
02-3-101	EZ72	TOTAL BUDGET		$20,763.88	.	.
02-3-101	EZ72	CLASSROOM TEACHER	1110	$18,921.88	0.6	101
02-3-101	EZ72	TEXTBOOKS	4110	$1,107.00	1107.0	301
02-3-101	EZ72	BOOKS OTHER THAN TXTBKS	4210	$369.00	369.0	301
02-3-101	EZ72	INSTRUCTIONAL SUPPLIES	4310	$237.00	237.0	201
02-3-101	EZ72	INSTRTNL EQUIPMNT REPL	6510	$129.00	129.0	301

* * *

SERVICE DESCRIPTION=Basic English 8

CATEGORY CODE	SERVICE CODE	RESOURCE DESCRIPTION	OBJ CODE	BUDGET	QUANTITY	UNIT OF MEAS.
02-3-101	EZ80	TOTAL BUDGET		$6,926.29	.	.
02-3-101	EZ80	CLASSROOM TEACHER	1110	$6,307.29	0.2	101
02-3-101	EZ80	TEXTBOOKS	4110	$369.00	369.0	301
02-3-101	EZ80	BOOKS OTHER THAN TXTBKS	4210	$123.00	123.0	301
02-3-101	EZ80	INSTRUCTIONAL SUPPLIES	4310	$84.00	84.0	201
02-3-101	EZ80	INSTRTNL EQUIPMNT REPL	6510	$43.00	43.0	301

* * *

SERVICE DESCRIPTION=General Eng./Lang. Arts 8

CATEGORY CODE	SERVICE CODE	RESOURCE DESCRIPTION	OBJ CODE	BUDGET	QUANTITY	UNIT OF MEAS.
02-3-101	EZ82	TOTAL BUDGET		$27,741.17	.	.
02-3-101	EZ82	CLASSROOM TEACHER	1110	$25,229.17	0.8	101
02-3-101	EZ82	TEXTBOOKS	4110	$1,476.00	1476.0	301
02-3-101	EZ82	BOOKS OTHER THAN TXTBKS	4210	$492.00	492.0	301
02-3-101	EZ82	INSTRUCTIONAL SUPPLIES	4310	$372.00	372.0	201
02-3-101	EZ82	INSTRTNL EQUIPMNT REPL	6510	$172.00	172.0	301

FOOTNOTES FOR CHAPTER 2

<1> For greater detail on the technical implementation of the RCM, the reader may refer to "The RCM: A Resource Management and Program Budgeting Approach for State and Local Educational Agencies," by Jay G. Chambers and Thomas B. Parrish prepared for the National Institute of Education, 1985, a project report for the Institute for Research on Educational Finance and Governance at Stanford University.

CHAPTER 3

THE RCM AS A DECISION MAKING PROCESS: A REVIEW OF PREVIOUS EXPERIENCES

INTRODUCTION

The purpose of this Chapter is to introduce the RCM approach as a decision making process for educational agencies at the Federal, state and local levels. Over the past few years, we have had the opportunity to apply the RCM methodology to each of these contexts. Our experiences in applying this methodology to cost analysis and decision making at these levels will be related in order to explore the linkages between the information provided at each level and to examine the differences in the way the methodology was implemented in these different circumstances. The importance and success of the RCM as a tool for management of resources in education will depend largely upon how it is implemented for these different purposes. This Chapter is intended to draw out the lessons of our experiences in the implementation of the RCM.

The first section of this Chapter examines the state level applications of the RCM system to projects directed toward school finance reform. These kinds of projects represent the first application for which the RCM was initially developed. Our previous work in Illinois and Alaska is described. The second section of the Chapter is devoted to exploring the utilization of the RCM as a tool for local planning and budgeting. The third section of this Chapter examines the application of the RCM to expenditure studies at the federal, state and local level. This Chapter concludes with a brief report on the outcomes and current status of those state projects is presented in the second section.

APPLICATIONS OF THE RCM SYSTEM AT THE STATE LEVEL

There is a general lack of information concerning the relative costs of individual educational programs at all levels of educational governance. Consequently, although all of the states allocate more dollars for students in such high cost programs as special education, these adjustments are seldom based on analyses of the actual costs of serving such students.

Many state funding formulas are largely based on historical precedent. As the fairness of state funding formulas for education has increasingly come under attack, factors such as the accurate measurement of educational program cost variations has become more important to state policy makers. The RCM provides the capability to go beyond the question of what districts have historically spent to tackle the question of what districts NEED in relation to one another and to provide funding to all districts to operate programs that comply with a single set of specific, statewide program standards.

The RCM has been designed to assist state policy makers to derive programmatic cost standards for funding purposes. These guidelines can be used to ensure the allocation of state aid on the basis of differences in the costs of providing comparable educational programs at different locations across the state. If, for example, states knew the relative costs of delivering a standard high school curriculum, a standard vocational curriculum and a standard special education curriculum in different districts throughout the state, an equitable amount of state aid for each district for each type of program could be determined.

The measurement of educational program cost variations is, in fact, quite complex; but it is also very important because it seriously affects the ability of school districts across the state to provide educational programs of comparable quality. The RCM can be used to analyze existing expenditure patterns by program and can provide a decision making structure for establishing statewide educational program quality standards for funding purposes.

The RCM was originally designed to address these issues of adequacy and equity in state school finance. It is appropriate then that our first opportunities to apply the RCM were in major studies directed toward the development of cost based funding for state school finance. The Illinois School Finance Reform Project was initiated in the fall of 1981. The project was funded by the Illinois State Board of Education for the purpose of developing a cost base for a new school finance formula.

As mentioned in the introduction to this report, our original vision of the RCM was as a technical model. We assumed that programmatic descriptions would be fairly easily accessed and that program managers at the state level would be sufficiently knowledgeable to describe and specify the resource requirements for the educational program and service delivery systems operating within their respective areas of jurisdiction. In some cases, this rather naive view was born out by our experience. In many instances, however, this expertise did not exist at the level of detail required for the implementation of the RCM. But more importantly, even in the areas where a knowledge base did exist, the development of programmatic descriptions as the basis for a school finance system was complicated by the political and economic factors.

These program managers were being asked to define "what ought to be" in the schools of the state. We did not ask them to define "what is" (i.e., how services were presently being provided). Rather, we asked them to make a determination of how these programs should be provided. They were being asked to go beyond what was currently being done and in some cases, even beyond existing state policies to define new programmatic standards of service. All they had to draw on to address these issues was their cumulative experiences and perceptions of what districts were currently doing. Some of the individuals were better prepared than others to carry out this task.

Beyond the issue of expertise, however, was the concern for the significance of the decisions that were being made for the educational experiences of students across the state. Who should be making these decisions about "what ought to be?" Are they representative of the various constituencies affected by the decisions?

In response to these observations, we began to develop a way of organizing the data gathering process for the RCM to take into account the need for programmatic expertise and the representation of certain political interests. For the purpose of the Illinois project, three levels of committees were organized through the course of the project. A series of Program Category Committees (PCC's) in each of the major program areas to develop the initial specifications of the program delivery systems. Eight program categories were included: elementary, secondary, special education, vocational education, gifted education, bilingual education, compensatory education, and adult education. Eventually, compensatory and adult education were dropped because of the nature of the funding arrangements. In general, membership on the PCC's included representation from the State Department of Education and educators from a variety of districts throughout the state.

Each of the PCC's was told that one or two individuals would be selected from the committee to represent the interest of the program category at the next level. At that level, these individuals would be responsible for providing justification for the recommendations and program specifications developed by the PCC. We had hoped that by telling the committees that they would have to provide justificiation for their recommendations to representatives of other committees, we would moderate the "richness" of the programs somewhat. This was done to respond to the claims of some individuals who had suggested that the PCC's would take a "pie in the sky" attitude and that they would specify only the "ideal." Our thought was that since representatives of these committees were going to have to interact in a larger forum later in the project and that these representatives were going to have to justify the actions of their fellow committee members to a wider audience, we felt the PCC's would act responsibly given the importance of their task and their own perceptions of the reasonable budgets within which they were likely to be operating. On average, the evidence from the overall simulations is consistent with our expectations. The initial state level cost estimates for providing programs and services as specified by the PCC's were well within 5% of the actual expenditures on educational services in the state of Illinois.

The second level of the RCM process was a Program Review Panel (PRP). The PRP was established to allow the representatives of each of the PCC's to review each other's delivery system specifications. This committee was given the task of making sure that the delivery system specifications of all of the PCC's were consistent with one another. The richness of the standards of service in each area was compared and the data were examined for errors of omission as well as comission.

The final committee level was designated the RCM Committee. The RCM Committee consisted of the membership of the PRP along with representation from the Bureau of the Budget, the Illinois State Board of Education, and the Illinois Legislature (staff members). In addition, representatives from the education community at large were added to provide a kind of "generalist" perspective on educational services. Two local school superintendents were selected to fill this role.

The purpose of this RCM committee was to review the work of the previous committees and to make final recommendations regarding the delivery systems which form the foundation of the RCM cost analysis. In general this committee worked relatively well and was able to carry on after the conclusion of the involvement of the consultants on the project.<1> Although the initial meetings of all of the committees were facilitated by the consultants on the project, the ownership and facilitation of the meetings were transferred as soon as possible to those responsible for implementation of the new school finance system in the state.

Six months after the conclusion of the Illinois project, the Alaska State Department of Education initiated a project with very similar objectives. The Alaska project represented a second opportunity to apply the RCM to the development of a cost based school finance system. Although we implemented some minor changes in the RCM process for the conduct of the Alaska project, the basic structure of the RCM technical model and the decision making process was the same.

Although each of the various committees organized as part of the Alaska and Illinois projects were able to carry out their assigned tasks, the members of the committees at all levels experienced some frustration early in the process. For the PCC's, this frustration arose out of having to construct a series of program service standards from scratch. In the Illinois study, the PCC's had no benchmark data on which to draw. They had only their own personal experiences with their own individual districts. In the Alaska project, the PCC members did have some of the program standards developed as part of the Illinois project on which to draw. However, because of the significant differences in the two states, some of these data were not terribly useful.

The frustration at the higher level committees seemed to arise out of a lack of direction and sense of authority to act. There was relatively little guidance from the central actors in either state as to how the RCM might be used or integrated with the overall plan to reform school finance in the state. While we were able to provide guidance as to how the RCM might be used in a school finance distribution system, the committees did not seem to feel that they had any authority to make any final recommendations, nor were they sure to whom they should make such recommendations. Moreover, for a variety of reasons, they were isolated from those individuals who were assigned to focus on the other aspects of school finance reform (e.g., tax issues, distribution issues).

Despite these problems, the existence of the process did provide a foundation for the credibility of the RCM as a viable cost analysis tool. Because of the widespread participation that had been encouraged throughout the development of the RCM in each state, the RCM as a tool for reflecting variations in the costs of educational services across local school districts gained relatively wide acceptance. Many individuals from around these states had been either directly or indirectly involved with the project and were kept aware of the progress of the development of the RCM within their state. The major concern among various constituencies seemed to be how the RCM would be used by the legislature and how it would be integrated into the school finance system.

THE RCM SYSTEM AS A TOOL FOR LOCAL PLANNING AND BUDGETING

As a result of our interactions with local school superintendents in the Alaska and Illinois project, we began to consider the possibility of applying the RCM as a tool for local planning and budgeting. Local districts had to struggle with many of the same issues as states related to the adequacy and equity of school funding. The major difference was one of magnitude and emphasis. In states where there still is a significant local contribution to revenue, each district had to define what an adequate level of support is for its students. Moreover, district officials must determine how to allocate state and local funds among alternative programs and various school sites. They also had to determine the extent to which budgets would be centrally controlled.

Under the auspices of the Institute for Research on Educational Finance and Governance (IFG) at Stanford University, we adapted the RCM for use by local school districts as a policy and program budgeting tool. The field test for this project was conducted in Alameda Unified School District (AUSD) in

California. Through this project, Alameda Unified developed a program-based, in addition to the traditional line-item, budget. A major goal of this project was to derive budgeting decisions that are "program driven," i.e. governed by the relative needs of the district's educational programs as defined by the overall goals and priorities of the district. A second goal of this effort was to provide a basis for initiating a formal communications network between the program and business components of the school district administration.

At the outset of the project, we were operating on the assumption that while we expected some differences between the application of the RCM at the state versus local level, we decided to implement the RCM initially the same way in which we had conducted the state study. This meant organizing the same kind of committee structure for developing program standards. One major difference that came up almost immediately was the was significantly greater level of detail in the local as opposed to the state application of the RCM. While programs were aggregated into types of classes or courses for the state level analysis, every single course (e.g., Algebra I or Senior English) became a program for the district level analysis. Moreover, the level of detail on resource requirements multiplied considerably. The primary reason for this was that the district had state reporting requirements and one of our objectives was to design a local planning and budgeting tool that would provide better decision making information on educaitonal programs as well as produce information that could be used for standard state reports. These technical differences required some rethinking about the structure of the computer software that we were able to resolve. The procedural components, however, represented a more formidable obstacle to implementation of the RCM.

We organized a series of committees much as we had done at the state level in the Alaska and Illinois projects. Some of the same kinds of staff members were assigned to the various committees as for the state level projects. As in the case of the state level projects, the committees lacked a good sense of direction and authority. While the demands for cost and resource related information were relatively clear, the purpose to these requests was less well defined. In part this can be attributed to the fact that we were involved in a pilot study and a research project and not a consulting contract in which the client had asked for a specific product. Part of our work was to determine what the product was and what shape it would take.

One interesting observation made in relation to the operation of the local versus state PCC's was regarding the differences in interaction between certain members of the committees. In both the local and state projects, teachers and administrators participated on these committees. However, while in the state projects these individuals acted as peers on these committees, these same types of individuals functioned differently in the local context. Often teachers and principals from the same schools were appointed to the PCC's in the local pilot project. In these cases, the teachers tended to follow the lead of their respective principals and did not function as peers on these committees. While it is possible that this observation may be unique to the district in which we were piloting the RCM, it does seem to make intuitive sense.

Beyond the normal uncertainty associated with the implementation of a research project of this kind, the committees were operating without any benchmarks. We began the project with a "what ought to be" mentality much as we did in the state. As the project evolved, however, we began to realize that part of the problem was that many of the individuals participating on our committees did not have a good sense of the "what is." Moreover, these committees were operating without any sense of what their authority was to make decisions or recommendations nor did they have any sense of to whom to make whatever recommendations they might have had. In both the state and local applications, we need to define the scope of authority for these committees and this needs to be done in conjunction with decision makers who have the authority to provide such direction. Steering committees were established in both the Alaska project and the AUSD pilot project, but unfortunately, these committees were appointed too late in both projects to provide the needed direction and authority.

One of the other major obstacles that arose in the implementation of the RCM in the local context involved the traditional dichotomy between the program and fiscal decision makers within the district. Because of the design of the RCM, our initial contacts in the district involved primarily program professionals (the "spenders" as we previously referred to them). Because the RCM is built upon the specifications of program and service delivery systems, much of the initial data gathering on the committees is done with program professionals and involves only minimal interaction with the fiscal professionals in the district. Unfortunately, the way in which the RCM was being implemented represented an implicit and perhaps explicit threat to the fiscal professionals. Information in this instance represents power over decision making. The program professionals had little power over budget allocation in this district, because they lacked information. This is not to say that the lack of information was the result of a conspiracy, but rather to indicate simply that the information was not in a form that would permit the kind of program level resource and decision making information which underlies the basic design of an RCM type system. Thus, the fiscal professionals were not substantively involved in the project and were being threatened with a loss of power. Both of these factors had the affect of reducing the level of cooperation required of the fiscal and business divisions of the district necessary for implementation of the project. The resistance or perhaps better the reluctance that we encountered in the course of the project from the fiscal division was a result of design problems with the procedural as well as the technical components of the RCM approach. Despite the considerable support of the local Board of Education for theAUSD, it was not sufficient to overcome the lack of cooperation on the part of the fiscal officers of the district.

One of the other technical issues encountered in implementation of the RCM at a local versus state level relates accessibility of the computer technology. The present version of the mainframe program is written using SAS (Statistical Analysis Systems) software from the SAS Institute based in Cary, North Carolina. Until 1985, the SAS product was exclusively a mainframe product. Thus, a local district desiring to implement the RCM as a budgeting and planning tool would have had to hook up to their own or a remote mainframe computer. Moreover, because SAS was primarily designed for IBM or compatible machines, there were further limitations to accessibility. Many large districts already have their own mainframe computers, but not all are IBM compatible nor do they have SAS installed. Despite the relative ease of purchasing micro computers and other relatively inexpensive hardware and software that would allow communication between smaller districts and remote mainframe computer systems, there are a number of practical difficulties that increase the effort and cost of implementation. Few of these difficulties are insurmountable, but this increases the difficulty of installing the RCM and may discourage a local district from being interested in trying something as new as the RCM.

As we have reviewed our experiences in the local pilot project, we have posed a number of questions to ourselves about the implementation of the RCM. Do we need a process at the local level? How does (should) this local process differ from the state process? What technical elements of the RCM impede local versus state implementation?

APPLICATION OF THE RCM TO EXPENDITURE STUDIES

Dr. William Hartman, of the University of Oregon, laid the groundwork for the initial RCM concept in measuring the cost to the nation of fully implementing the Education for All Handicapped Children Act (PL94-142).<2> In this study, Hartman gathered data on delivery systems, enrollments, incidence rates for handicapping conditions and agerage resource prices in special education programs and services throughout a large sample of states and aggregated these data to estimate current and projected actual expenditures required to implement PL94-142.

In the Fall of 1984, DRC in conjunction with AEFP was awarded a three-year contract by the U.S. Office of Special Education to use the RCM methodology as the conceptual base for a Congressionally-mandated study of the costs of special education and related services at 60 randomly selected school districts across the nation.<3> Rather than attempt to impose uniformity on the myriad of accounting and budgeting techniques that these districts may employ to plan and track expenditures, the research teams on this 3 year project will list the ingredients that each district is actually allocating to each of the special education programs offered. By attaching local prices to this list of resources, it will be possible to determine actual expenditures/costs by program. The researchers will be concerned with such resource standards as class size, personnel allocations, and equipment levels.

Two other studies designed to track expenditures and patterns of resource allocation were done using the RCM methodology. One such study was carried out for nonpublic special education schools in California. A second study was done to explore the reasons underlying the patterns of cost differences observed across a sample of local districts in Connecticut. The Connecticut study included selected programs and services within the overall elementary, secondary, special education and bilingual programs.

All of these projects use the RCM concept to make an assessment of "what is" with respect to educational program expenditures. Data are gathered through interviews with program and business professionals in local districts or school sites and through the examination of existing student, personnel and fiscal databases. No formal committees are organized and no questions regarding "what ought to be" kinds of scenarios were required. In short no formal RCM process is required, and yet a good deal of RCM type information is being gathered in a relatively short period of time by simply organizing the data collection activities in a way compatible with the technical requirements of the RCM approach.

These processes will reveal the full costs of each of the various educational programs, and will allow the comparison of these costs against other programs. Viewing the different ways that children with similar needs are served by different districts will also provide a basis for considering the most efficient ways of serving children with different needs. In addition, this approach should initiate a discussion of the resource needs of students in special programs in relation to the needs of students in standard programs.

One of the major issues that arose in the conduct of each of these projects was the amount of time that would be available on site to gather the various items of data. For example, in the Congressionally mandated study of special education being conducted by DRC and AEFP, the data gathering for all but the very largest districts was conducted by a single individual in approximately seven days on site. In the study of nonpublic special education schools, we allocated approximately 2 professional per site days to gather data on a relatively limited set of programs and services. In the Connecticut study, we also allocated 2 days for each of five districts to gather data on a selected sample of educational programs as well as a fairly comprehensive set of administrative and support services.

Being forced by budgetary limitations in each of these projects to limit the scope and time permitted for data gathering caused us to consider alternative strategies for implementing the RCM in different contexts. What possibilities are there for streamlining the RCM process for database development and for combining these streamlined process of data gathering with a more efficient and better defined decision making process? The large scale projects conducted in the states were expensive both from the standpoint of the cost of retaining the services of consultants and from the perspective of the travel and time spent to bring in individual members for the various committee meetings. While a large budget can be justified in a study which is intended to reform the school finance system of an entire state, it is not likely that the same budget would be allocated to implement a budgeting and planning tool in a local school district or for that matter to develop a planning tool for state. The attractiveness of the RCM as a finance, planning and/or budgeting tool at any level will depend upon the cost of its implementation, not only in terms of the cost of employing consultants for initial studies and database development, but also in terms of the time and effort of local professionals and the disruption of the existing system of resource allocation. It will be important to use the time of busy professionals as effectively as possible.

OUTCOME OF THE STATE LEVEL PROJECTS

It is useful at this stage to describe briefly the outcome of the two major state projects directed toward the reform of the school finance systems in Illinois and Alaska. There are some lessons to be learned from this account of our experience as well. What actually happened to the RCM in both states largely occurred well after the projects by the consultants were completed. The account of what happened in these two states is based on conversations over the course of the past few years between the authors and the state project directors and others from the two states.

As of this writing, Illinois has not implemented the RCM as the basis for their school finance system in that state. In fact, the planned reform in the Illinois school finance system has yet to occur. There are two major factors that have contributed to the RCM not being implemented. First, at the time when the new school finance system including the RCM was being formulated and proposed in the form of legislation, the State Superintendent of Public Instruction in Illinois resigned. Thus, one of the chief political actors involved in the initiation of the study and who would have to support the legislation resigned prior to the completion of the effort. Whatever political momentum existed for implementation of a new school finance system disappeared. A new superintendent was appointed in the middle of this whole process and opted to give the matter "further study" before proceeding.

Second, it is important to recognize that the RCM is not, in and of itself, a distribution system. While it has distributional implications, the RCM is a cost model. It provides a basis from which a school finance system may be devised. In its purest form, the RCM might be utilized as a variable foundation in a standard "foundation formula."<4> However, it can be utilized in a variety of ways with school finance formulas. The new legislation represented a comprehensive package of reform for the finance distribution formula as well as tax reform. As with any new formula, there were winners and losers relative to the current system. Despite the view that one might be a "fairer" system, few districts or taxpayers want to give up what they currently have if it is not absolutely necessary. The RCM, which was but a small part of this package, took the political blame for economic impacts for which it was not even responsible. In short, the RCM was the only piece of the whole package that had a name attached to it, it was a new innovation, and hence all that was negative about the proposed reform seemed to become associated with the RCM.

What has been gratifying about the intervention in Illinois is that the RCM has been used for some planning and analysis purposes by the State Department of Education. Our understanding is that the cost implications of some funding alternatives as well as of reorganization of special education cooperatives have been simulated using the RCM computer software installed as part of the Illinois project. More importantly, however, the concept of cost based funding has seemed to prevail in the state according to comments made to this effect by the Illinois State Superintendent of Public Instruction in his address to the annual meeting of the American Education Finance Association, 1986.

During the course of the RCM project in Alaska, there appeared to be a number of competing agendas regarding the reform of school finance. No clear leadership emerged within the Alaska Department of Education to guide the RCM project through its various hurdles. The RCM committees were provided no guidelines or authority to act. Our last communications with individuals in Alaska indicate that the RCM was used to develop cost weights for various classes of pupils and that these weights were proposed as part of the reform package for the new school finance system.

FOOTNOTE

<1> The consultants refers to Jay Chambers and Tom Parrish the principal partners in the AEFP, Inc., the firm with whom the Illinois State Board of Education contracted to carry out the study.

<2> William T. Hartman, "Estimating the Costs of Educating Handicapped Children: A Resource-Cost Model Approach" (Stanford University, Ph.D. Dissertation, 1979), p. 96.

<3> AEFP, Inc. has sub-contracted with DRC of Washington D.C., to provide the conceptual outline and basic methodology, as well as to assist in the implementation of this project.

<4> The standard "foundation formula" in school finance would take the following form:

$$S(i) = F - [R \times V(i)]$$

where $S(i)$ = State aide per pupil provided to school district i,

F = the "foundation amount" per pupil guaranteed to every district,

R = the minimum tax rate that the local district must levy to participate in the state aide program, and

$V(i)$ = the assessed value of property per pupil in district i.

Under this standard "foundation formula," the reader should notice that the foundation amount (F) is constant for all districts. No differences in the foundation level are incorporated to take into account differences in the costs of doing business in different parts of the state or differences in the composition of educational needs among the pupils in local districts. In recent years, pupil needs have been accounted for by increases in categorical aide and some states have implemented cost indices to adjust state aide for differences in purchasing power.

The RCM might be incorporated into this kind of foundation formula by allowing the value of F to vary by district. The bottom line numbers derived from an RCM type of simulation would reflect the per pupil costs of serving students in each district given the variations in the costs of purchasing comparable resources and the differences in programmatic needs of pupils. This simulated cost could be used as the variable foundation amount for each district so that the foundation formula would now be written,

$$S(i) = F(i) - [R \times V(i)].$$

CHAPTER 4

RETHINKING IMPLEMENTATION OF THE RCM

INTRODUCTION

In Chapter 2, we provide the reader with a brief overview of the technical components of the RCM: the elements involved in building the RCM database and the kinds of outcomes produced by the computer software. In Chapter 3, we presented an outline of how the decision making components of the RCM have been carried out in previous studies at the state, local and federal levels, and we discussed some of the lessons to be learned out of these experiences. Because the RCM represents a relatively new approach, all these previous studies should be viewed as part of a larger effort evolving toward a viable cost model for educational decision making.

The purpose of the present Chapter is to describe a variety of scenarios for the application and implementation of the RCM methodology and to outline how implementation might be carried out to avoid some of the problems and obstacles encountered in our earlier studies. One important conclusion is that the approach to the conduct and implementation of an RCM study will differ somewhat depending upon the level of application (i.e., federal, state and local) and the desired utilization of the outcomes of the project. This Chapter will walk through the implementation of an RCM project by raising the questions and issues that will need to be addressed at each stage of the project. The emphasis of this report will be on procedural rather than technical concerns. Technical issues related to database development and utilization of the computer software have been addressed in the report presented to the NIE for fiscal year 1984 entitled "The RCM: A Resource Management and Program Budgeting Approach for State and Local Educational Agencies."

INITIATION OF THE PROJECT

One of the first issues that must be addressed in beginning a project to apply the RCM is whether the project is to be more oriented toward "WHAT IS" or "WHAT OUGHT TO BE" kinds of questions. The importance of establishing any kind of formal decision making process along with the implementation of the RCM is almost entirely dependent upon which orientation is adopted. Although orientations may change through the course of a project, it is important to establish an initial orientation to set the tone for the early stages of data collection.

To clarify these issues a bit, let us consider some examples of these two alternative orientations. The Congressionally mandated study of special education expenditures referred to in Chapter 3 is a classic example of a "WHAT IS" type of study. Similarly, the study carried out for the state of Connecticut to explore some of the sources of variation in the costs of providing educational services across the state represents another example of the "WHAT IS" orientation. The major purpose of both studies is to identify what level of resources is presently being devoted to the provision of various types of educational services and to identify the various factors underlying the observed differences in actual expenditures across jurisdictions. Other studies that might fall under this category would include planning or policy analysis studies of educational programs and costs. In these types of studies the purpose is often to determine the effects on current patterns of resource allocation of specific changes in policies (e.g., requirements for service provision) or exogenous factors (e.g., distribution of students according to special needs).

In any of these instances, there is no need for a formal decision making process per se. A single steering committee of key individuals would be established to monitor data collection activities and procedures and to provide input on the specification of certain kinds of policy questions or changes that might be of interest.

In the case of a "WHAT OUGHT TO BE" orientation, the implications for the development of the RCM process might be different. Both the Illinois and Alaska school finance reform projects would fall into this category of RCM projects. The primary purpose of these two projects was to develop a new school finance distribution mechanism that was at least in part based on variations in the costs of providing for the differing needs of students served in different local jurisdictions around these states. If similar students across districts are to be treated similarly, then the state will have to establish a series of standards for service provision. Moreover, it may be appropriate to differentiate these standards according to certain criteria, e.g., district size and geographic location. Given the complexity of the educational enterprise and the diversity of opinion among relevant constituencies as to priorities, state policy makers will be required to address a number of "WHAT OUGHT TO BE" kinds of questions in this type of application of the RCM. What alternative standards of service might be considered? How might these standards be altered for different classifications of districts? What criteria should be used to classify districts? Should these standards be imposed on the local jurisdictions or should they be used exclusively for the purposes of determining funding while allowing the local school officials to allocate resources?

Similar kinds of questions might be addressed by a local school district considering the utilization of the RCM as a local budgeting tool. The budget determination process is ultimately one that must address a series of "WHAT OUGHT TO BE" kinds of questions prior to establishing a final allocation of resources among competing uses.

In the cases of "WHAT OUGHT TO BE" applications, it may seem more appropriate to initiate a comprehensive decision making structure. The purpose of this process is to solicit the input of qualified experts in the relevant subject matter areas as well as to ensure representation of the various relevant political constituencies. The importance of this kind of a participatory process is to help establish the credibility of the approach from a technical and political perspective.

The foregoing distinction between the "WHAT IS" versus "WHAT OUGHT TO BE" studies makes the decision about implementation sound deceptively simple. The reason for this is that underlying almost any "WHAT IS" type of question is a "WHAT OUGHT TO BE" kind of question. When one is evaluating the impact of a policy or exogenous change on patterns of resource allocation or is examining the patterns of variation in expenditures and resource allocation, it is usually for the purpose of making an assessment of the current system in view of alternative approaches to accomplishing the same goals.

Beyond the simplicity of this dichotomy, however, is one of the problems that we encountered in the development of the initial RCM database in all of our previous studies. The individuals participating on the various committees began the process of specifying service standards with no benchmarks. The only information they brought to the meetings derived from their personnel experiences. Although there was generally representation from jurisdictions that exhibited some of the characteristics related to differences, there was no formal mechanism initiated for organizing and sharing these alternative perspectives in any systematic way.

For these reasons, one of the key recommendations for the implementation of an RCM project that we would make in the future is to begin the project by gathering data that can be used as benchmarks. This means that almost any project should be initiated from a "WHAT IS" perspective. Gathering data on current patterns of allocation and methods of service delivery will provide a solid foundation upon which to consider change or the development of new standards. If these data are comprehensive enough, they provide boundaries within which the standards might be established. These benchmark data provide a way of increasing the efficiency of the entire process. It reduces the anxiety of the participants in dealing with data organized in an unfamiliar format because the benchmark data become examples of what the RCM data should look like. No longer are the committee members having to fill out blank worksheets for the specification of educational delivery systems. Committee members would be reacting to a set of numbers that reflect existing patterns of resource allocation.

From the standpoint of those conducting such a project, it means laying some ground work for data collection by going into the field prior to the initiation of a structure for decision making. The Connecticut project represents an example of how one might initiate a statewide study for a school finance reform project. The delivery systems (resource requirements and numbers of pupils served per service unit) for a selected sample of programs and services were specified across a sample of school districts. These data on the delivery systems for the sample districts serve as the benchmark data for review by the participants in the decision making process.

In an application of the RCM to develop local budgets, one would conduct sufficient interviews with program and business professionals within the district to develop the initial RCM database to reflect existing patterns of resource allocation. This raises another issue related to the potential conflict with the business professionals within a jurisdiction. This process of initial data gathering immediately involves the business professionals in the project at an early stage, something that was not done to the same degree early in our pilot study of Alameda Unified School District. This sense of involvement, participation and even ownership in the final product of the work will be important in gaining the acceptance from the fiscal decision makers.

Moreover, in this process of gathering the initial database, it is useful to spend sufficient time with business professionals in the local jurisdiction to devise ways of using as many as possible of the existing conventions and codes for organizing information. To the extent that existing program and object codes can be used in the development of the new database, it will be possible to make comparisons with the original database. This has three major advantages. First, the new database is to some degree developed in terms that are familiar to the participants.

Second, this also provides a mechanism for validating information to the extent that validation is appropriate in comparing the new versus old formats for data. One can check for errors of omission more easily in this case. Third, by utilizing the existing codes to the extent possible, comparisons of the alternative databases (the new and the old) should reveal more clearly any advantages that the new database might have for decision making by placing emphasis on the differences in the organization and presentation of the information. Perhaps the most important benefit to be gained from relying on existing structure is that it reduces the cost of transition to a new system.

What happens if there are not sufficient resources or time to gather this initial benchmark database? Indeed, even when the purpose is to gather the initial database to reflect "WHAT IS," it is often helpful in conducting interviews to provide examples of the kind of data you are trying to gather. This issue arose in the conduct of the Congressionally mandated special education study and the Connecticut education cost study. Teams of researchers went into the field to gather descriptions of service delivery systems within fairly short periods of time. There would not be sufficient time or funds to review computerized budget or personnel files. All data would be gathered through interviews with program professionals. Questions had to be relatively straightforward and precise with regard to the desired items of data. We realized that the efficiency of the data gathering procedures would be enhanced by our ability to provide prototypical delivery system specifications pertinent to each of the program areas under study.

In response to this need, we have developed a prototype RCM database. Our experience in doing educational cost analysis over the past few years is that there are more similarities than dissimilarities in educational programs across local jurisdictions. Since education is a labor intensive activity, major differences in costs arise out of differences in class sizes, caseloads, teacher class loads, and salary levels. To a lesser degree, the composition of students across educational programs also will create cost differences related to the variations in the administrative and support burdens associated with these different programs. In order to facilitate the data collection activity, we have devised a prototype set of educational program and service delivery systems. This database includes allocations of personnel as well as nonpersonnel resources to a variety of prespecified types of educational programs and services. The nonpersonnel resources include dollar allocations to books and materials as well as lists of capital equipment items associated with specific educational programs and services (both instructional and administrative and support services).

A major advantage to the prototype database is that it places the user in a more reactive rather than proactive mode, and hence, reduces the amount of time required to gather information on delivery system specifications. While some might argue that the structure and information contained in the prototype database may perhaps influence responses of users somewhat, this is less likely to be a problem in an enterprise such as education where the differences in technology of delivery systems across local jurisdictions is not great. Moreover, differences in patterns of delivery system specifications are likely to be more related to the more visible data elements such as class sizes and caseloads on which new data are fairly easily ascertained within given areas. Minor differences in the lists of capital equipment within a given program across jurisdictions are less likely to have much impact on the overall analysis given the relatively small proportion of the budget allocated to capital items. Chapter ??? provides a more detailed discussion of the structure and content of the prototype database.

ORGANIZING THE RCM DECISION MAKING PROCESS

Once an initial RCM database has been developed, one can then decide whether it is desireable to proceed to deal with the "WHAT OUGHT TO BE" issues. This initial database provides a better foundation upon which to base decisions about more appropriate patterns of resource allocation. It provides a benchmark both in terms of the access to services as well as costs. It provides a basis against which one can decide whether alternative patterns of resource allocation are worth the cost. It provides a context within which cost-utility or cost-benefit considerations might be brought into play.

Whatever the circumstances, however, the consideration of "WHAT OUGHT TO BE" kinds of issues raise questions that by their nature must be addressed in a political context. The issues may have to be resolved by a policy making body (e.g., a state legislature or a local school board), and the individuals or constituencies responsible for making recommendations must have credibility with those legislative bodies and must have faith in the process by which the recommendations were developed.

Toward this end, we have developed a structure for decision making under the implementation of the RCM and this structure has been designed to encourage a diversity of participation by various constituencies, to provide guidance to those participating in the process from the appropriate authorities and to bring together fiscal and programmatic interests. It is a process that builds on and recognizes the explicitly political nature of the types of decisions being made within the RCM.

The RCM process leads policy makers through the politically sensitive decisions always associated with the allocation of public resources. It is a process for establishing standards regarding the programs that should be receiving state financial support and the levels of support deemed appropriate. These decisions are made in light of the projected cost data, the competing needs for these funds and the overall level of funding available.

There is a great deal of flexibility in using the RCM System, and the accompanying process can be tailored to fit existing organizational structures and various political climates. A prototype of this process is outlined in Figure 2. The RCM process is depicted at five levels of involvement. At Level 1, a Policy Committee is formed. This relatively small group of policy makers will comprise a unique combination of individuals for each organization. For example, members would represent the school board and the administration, and might also come from other segments of the school and community, such as parents, students, and teachers.

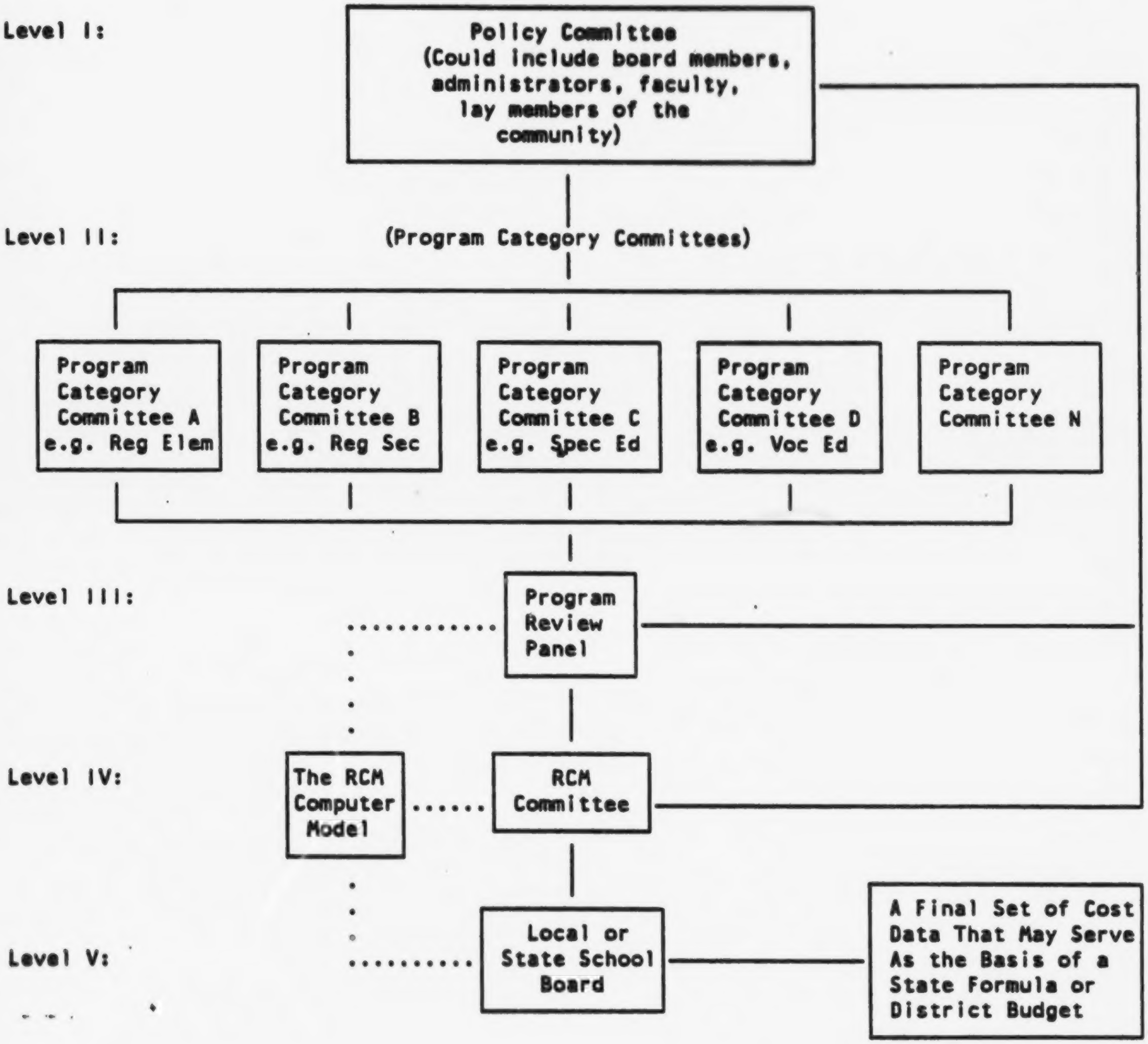
The primary role of the Policy Committee is to provide some guidance and direction to the project. It will set the tone of the conduct of the project. It will have to define the overall scope of the project and specify the lines of authority and responsibility for all of the remaining participants. The success of the project in achieving its objectives will likely depend upon how clearly the scope of authority and responsibility are defined by this Committee. This group will define the program categories to be included in the analysis, and may use this opportunity to assess the immediate needs and long-term plans of the organization.

More broadly this group may become involved in strategic planning as well as in activities that define the larger context into which an RCM type study might fit. The RCM computer software and the cost analysis that it is capable of doing should be viewed as a tool for analysis. However, in general, it is a tool that fits into a larger context of policy analysis whether it be used as a cost base for a state school finance system or a budgeting and planning tool to help local school districts allocate resources, close (open) schools, etc. For this reason, some part of the RCM decision making process must of necessity interface with activities associated with this larger context into which the cost analysis fits. The Policy Committee established as part of the RCM process might be a Committee with a much larger set of responsibilities associated with these other tasks.

As an example, in the case of a state-wide school finance study, the Policy Committee might encompass all of the major studies related to the reform effort and would be responsible for coordinating the results of the various reform projects. The importance of this coordination is to ensure that various results are consistent with one another.

FIGURE 4-1

THE RCM DECISION MAKING PROCESS


Level I:
Policy Committee (Could include board members, administrators, faculty, lay members of the community)
Level II:
(Program Category Committees)
Program Category Committee A e.g. Reg Elem
Program Category Committee B e.g. Reg Sec
Program Category Committee C e.g. Spec Ed
Program Category Committee D e.g. Voc Ed
Program Category Committee N
Level III:
Program Review Panel
Level IV:
The RCM Computer Model
RCM Committee
Level V:
Local or State School Board
A Final Set of Cost Data That May Serve As the Basis of a State Formula or District Budget

At Level 2, the Program Category Committees (PCC's) are convened. The exact organization of programs and services into program categories will be particular to each organization. Common program categories might include Regular Elementary, Regular Secondary, Special Education, Vocational Education, and Bilingual Education. These groups should include members with specific program expertise and broad-based constituencies. The primary task of each program category committee is to designate the resources that are, or should be, assigned to each of its educational programs.

In a state level school finance application of the RCM, the PCC's should represent the constituent districts within the state. The importance of representing the constituent districts is two-fold. First, it ensures that the different circumstances that result in educational cost differences are accounted for in the process of developing standards of service delivery. This provides a mechanism for building the technical credibility of the process of appropriately reflecting the needs of students in different parts of a state.

Second, providing for the diverse representation of districts around the state helps to develop the political credibility of the approach. It brings in the different geographic political interests of the citizenry. Beyond this geographic representation, however, the PCC's should represent the various professional interest groups involved in education, e.g., administrators and teachers. Teachers associations in this country are among the most politically powerful interest groups and their membership clearly has something to contribute to a state-wide process involved in the consideration of service delivery standards.

In a local application of the RCM, the same basic parameters for representation apply on a smaller scale. Representation of various communities and interest groups from within the district might well be called for in the utilization of the RCM as a tool for local planning and budgeting where service delivery standards are to be established. Schools serving different communities may required slightly different delivery systems, and the political viability of a participatory approach to budgeting must include the most important interest groups represent educational professionals. In the local context, a PCC could represent a forum in which administrators and teachers can work together in a non-adversarial context where the goal is to establish recommendations for "appropriate" standards of service.

It should be noted that while there may be some advantages in local applications to an participatory process for implementation of the RCM, it may be possible in smaller districts to accomplish a great deal without having to organize an elaborate process. Even in larger districts where the goals of the project are less far reaching, it may not be necessary to devote large amounts of time to an all encompassing process for developing recommended standards of service at the level of the PCC's. Much could be accomplished with a relatively small group of individuals operating at a more central level with a more extended review occuring later on in the process (i.e., one of the subsequent levels described below).

At Level 3, representatives from each PCC are selected to serve on the Program Review Panel (PRP) for the initial evaluation and standardization of the resource quantities that have been specified. This stage allows the development of a consistent rationale to underlie the resulting program standards. It allows the participants to check to see if all fo the PCC's used the same criteria and were operating under the same implicit contraints in developing the recommended service standards. It is important for the professional educators to develop a common foundation on which to make the recommendations on the standards of service. This committee (i.e., the PRP) is the last place in the process in which the professional educators are likely to dominate membership of the committee. It is expected that they will reach some consensus of opinion regarding the possible trade-offs across educational programs and services and will develop a comprehensive justification for their recommendations.

In Level 4, the RCM Committee is made up of the PRP and representatives outside the education agency. This allows a broader perspective through the addition of representatives from the agency's supporting environment. At the state level, this might include representatives from the legislative and executive branches of government. These constituencies represent the more general concerns of government which must balance the resource needs of education against all other public services. At the local level, teachers, parents, students and other community members might be included. This RCM Committee might also be a subset of the original Policy Committee or it might be the same committee. It is at this stage that the RCM must begin to interface with the other broader policy perspectives. This committee must decide how the information generated by the RCM will be used in conjunction with other information to answer the ultimate policy questions being posed.

In the last step, the proposed specifications and cost data derived by the RCM Committee move to the final decision making authority for review. At the state level this will be the State Board and Legislature; at the district level it will be the local

School Board. The two-way arrows in the diagram illustrate that the program recommendations and definitions may be submitted to the final authority and resubmitted to the program levels for further clarification or review at the discretion of the policy makers involved. The various levels of review serve to keep the specifications in line with the overall budget limitations facing the organization. At each level, the specifications may be altered or referred back to an earlier committee for further consideration.

Each level of the process for specifying educational resources is conducted such that the participants are kept aware of the resource constraints facing the organization. Intra-program and inter-program resource trade-offs become apparent to the participants through the realization that educational resources assigned to Program A reduce the remaining pool of resources available to Program B. At the same time, the RCM can provide a framework for comparing actual funding or service levels to the costs of the alternatives decision makers may wish to consider. The RCM is a method for assessing deficiency in funding as well as a practical tool for allocating existing resources.

At Levels 2 through 4 these negotiation processes may be informed by cost simulations from the RCM computer program. This capability is illustrated by the broken lines in Figure 4-1. It is important to note how the interactive nature of a computer program adds to the power of the RCM decision making process. Beyond the computational functions, which would be overwhelming if this concept were not computerized, the speed and facility of this computer program allows the simulation of a variety of resource allocation strategies. It is the near-immediate feedback of the cost implications of policy alternatives that allows fine-tuning and adjustment toward a balance that is "appropriate" in terms of what programs require and what is affordable.

Whatever the design of the process, it is important to be aware of the significant cost in terms of human resources of organizing and meeting the various committees. For this reason, it is important to plan this portion of the process carefully so as to use time as effectively as possible. Committee meetings should be well organized with objectives and any requests for additional information made well in advance of the meetings.

Moreover, implementation can be made smoother if the process is modified sufficiently to fit the existing organizational structure. While the basic structure of the RCM process outlined in Figure 4-1 can serve as a plan for decision making, there is no reason to alter an exsiting and smoothly functioning decision making process. Therefore, the RCM can be implemented by ensuring that the functions of the various committees outlined in Figure 4-1 and described above are integrated into the responsibilities of existing organizational entities.

SUMMARY

The foregoing Chapter has described the circumstances in which an RCM process may be appropriate for decision making in an organization that has decided to utilize the RCM methodology. It was concluded that "WHAT IS" kinds of investigations really do not require a formal process, but that "WHAT OUGHT TO BE" issues are likely to be best resolved through the organization of a formal process. One of the implications is that a great deal of the initial analysis for which the RCM might be utilized can be accomplished under a "WHAT IS" kind of mentality in preparation for the "WHAT OUGHT TO BE" issues that usually underlie the initiation of cost analysis projects. At the stage where the "WHAT OUGHT TO BE" issues are to be addressed, it would be useful to organize a formal decision making process. This formal process makes use of professional expertise in the early stages to develop service delivery recommendations. A process for providing rationales for these recommendations and in ensuring the consistency of various recommendations has been outlined. Finally, these recommendations are considered in a broader context including the educational professionals in combination with wider interest groups involved in the ultimate policy making bodies.

CHAPTER 5

STRATEGIC PLANNING AND THE RCM

The concept of strategic planning in education can be defined as a process for providing school districts with a long range plan for carrying out the mission it has defined for itself as effectively as possible within the context of available resources. Accurate programmatic cost information is an important ingredient in such a process. The planning of efficient operations for the future requires comprehensive data gathering processes to assist in the development of appropriate goals and objectives and cost information to consider the most cost-effective of the alternative approaches to achieving them. Thus, an RCM data base could serve as an integral part within the larger context of strategic planning processes. The purpose of this chapter is to present an approach to the concept of strategic planning as applied to public education.

INTRODUCTION TO THE STRATEGIC PLANNING CONCEPT

Many school districts set goals each year or identify major areas for emphasis but few develop focused long range directions for the entire district or carefully weigh the costs associated with alternative ways of meeting their priorities. Through such processes, there is a need to look at the district as a whole rather than as a group of individual departments or programs. These directions should be based on clearly established purposes or missions for the district in meeting the numerous needs of students, parents and the community. This process should involve the governing board and the top administrators in the district and should include input from a variety of staff and community sources. It should not endeavor to superimpose a new chain of management and communications for the organization. Rather, it aims at the more effective use of existing channels to provide information necessary to best meet the needs of the district.

There are three major phases in the strategic planning process. The Mission Phase is centered around the formulation of mission statements for the district and includes analyses of the district's internal and external environment. The next phase is the The Three Year Plan Development Phase. The three year plan formulated for the district in this phase is designed to be in keeping with the district mission. Specific program objectives are listed for achieving the objectives of this plan. The last phase is Monitoring and Review. In this phase the specific program plans are implemented, monitored and reviewed. The remainder of this chapter describes these three phases of strategic planning and concludes with a note on implementation. Appendix A contains an example of a Program Plan in the area of vocational education.

THE MISSION PHASE

The mission phase of the strategic planning process is initiated with the formulation of clear mission statements. These statements set forth the general purposes of the district and provide the foundation for all further planning. The next step in this phase is the consideration of the internal and external factors which affect the type of services to be offered and the manner in which they are delivered. Economic, political, technical, educational and social factors are considered through the development of environmental trend statements. Factors occurring within the district are also examined through the development of communication channels with students, parents, and community.

MISSION STATEMENTS. Mission statements form a clear, concise description of the basic purposes of the district. They also provide a basis upon which to assess the appropriateness of specific programs and services. Current programs which strongly support the mission can be fostered while those that are not totally consistent with the mission can be redirected.

Mission statements are usually drafted by the Board and the administration in a joint meeting. They are then distributed to staff and community for review and comment culminating with a public hearing at a regular board meeting. The mission statements begin with an overall mission for the district which is the district's basic philosophical statement. The specific mission statements then cover areas relating to students, parents, the public, other agencies and the district's internal operating programs.

The following is an example of an overall mission statement demonstrating the general philosophical position of the district: "To provide the highest quality education possible within limits of available resources, to enable each student to realize maximum potential, achieve self-sufficiency, and be a responsible citizen in an ever-changing environment."

More detailed mission statements are then developed for each of the various student and support areas:

student need areas - standard academic
college bound
vocational education
special education

gifted and talented
extra-curricular
educational support - guidance and counseling
testing and evaluation
library and media
health services
district support - staff development
curriculum development
transportation
food service

The mission statements should be developed in a workshop meeting of the Board and the administration where they reach consensus on each statement. This is usually best handled by an outside facilitator to allow each participant to work objectively and impartially toward reaching a common statement. A Board chair or a Superintendent are educational and policy leaders and usually find it difficult to lead a consensus discussion without being directive or abdicating their true roles.

The mission statements should be short phrases that are clear and concise and cover three major elements. The first is the target of the mission, who is to be served. This should be done in specific terms so that the exact population being covered is clear. An example of a target for a mission statement for gifted students would be, "those students who are certified through state criteria for gifted and district adopted criteria for talented." The second element is the statement of the services to be provided. The example for the gifted program could result in the following example, "provide an enriched and enhanced curriculum within the existing district framework." The final element is to include any constraints known to affect the delivery of the program to the target students. Continuing with the gifted example the statement could include, "within the level of categorical funding provided by the state." These statements then become the district's statement of philosophy and intent. They are intended to be used as a major determinant of the appropriateness of programs being offered.

ENVIRONMENTAL ANALYSIS

The environmental analysis component of this first strategic planning phase involves the identification of significant trends which will have an impact on the district's ability to deliver educational programs. If long range planning is to be effective, consideration must be given to factors beyond the control of the district. To some extent, identifying environmental trends is a futuring activity and will be subject to all of the imprecision inherent in any attempt to predict the future. But, careful analysis of current conditions, drawing on the insight of experts in appropriate fields, can produce useful sets of predictions. The first year of planning of this type usually does not yield extensive local trends so districts tend to use many trends which are statewide in scope. A number of district trends can be identified and will be expanded in future years. The type of trends shown in the following list indicate the areas that can be covered and can also be reflected in the individual program statements where appropriate.

Federal trends - Attitude toward major programs, funding levels and regulations by the President and Administration, Office of Education and Congress.
- Attitude toward categorical aid and block grants, and educational research.
- Projected funding levels by major programs.

State trends - Political attitudes toward major programs and funding levels by the Governor and the Legislature.
- Projected economic conditions and predicted funding levels by major program.
- Directions of major programs as determined and directed by the state.
- Current and projected legal and judicial mandates.
- Projected directions in employer-employee relations and the availability of human resources.
- Directions and descriptions of technology as applicable to education.

District trends - Academic trends as measured by test scores.
- Student demographic profiles.
- Attitudes and behaviors of students and the school climate.
- Any major problem area being faced by the district.

Community Trends- Attitudes and support of local community.
- Relationship with other levels of government.
- Relationship with other districts, private schools and higher education.

Trends are usually short statements which individually may not be that insightful but which can be quite helpful in guiding the strategic planning process when presented together in a systematic fashion. The state trends should be gathered from experts and in many cases are already available from various state level organizations or agencies. The local trends must be ascertained by district personnel. School climate can be determined through a survey of the teaching and site level staff who indicate what they have seen as trends in such areas as:

Students - Behavior, attitude, motivation, and relationships with peers and adults

Parents - Involvement with their child and the school, and attitude toward the school and district

Community - Attitude and involvement toward the school and the district

The district should assign appropriate administrators to develop trends in demographics, relationship with other governmental agencies, and conditions affecting the various educational programs. All of the trends gathered should be reviewed and validated by the administrative team to ensure that they are realistic and should be published as trends affecting districts programs.

MARKET ANALYSIS. The market research component of the planning process includes a review of its "clients'" needs and priorities. For such analyses the district's clients should be considered to include parents, students and the community. District staff should also be considered as internal clients for some of the districts internal administrative and support services.

An internal survey is usually conducted which assesses most of the internal support services. This is done through a written survey of management and clerical level staff which have direct contact and depend on specific internal services. These surveys may best be done by an outside agency to ensure that the results are objective and not self serving. The survey should be anonymous but can identify the type of staff so that a more thorough analysis can be made of the results. Typical functional areas included in the internal survey include:

Personnel services	- Selection of staff
	- Affirmative action
	- Handling fringe benefits
	- Employer-employee relations
	- Contract administration
Business Services	- Budget development
	- Fiscal reporting
	- Purchase order processing
	- Payroll processing
Maintenance and Operations	- Custodial services
	- Maintenance services
	- Landscaping and grounds
	- Energy management
Instructional Support	- Curriculum development
	- Textbook selection
	- Staff development
	- Testing and evaluation support

Market analyses can also be conducted for parents, students and the community. There are a number of processes that can be used to conduct this type of survey, but districts find that one of the most efficient is a random sample telephone survey covering every school in the district. The type of questions have to selected very carefully to avoid raising expectations that cannot be fulfilled. The questions are usually compiled by the administration but it is best to have the survey actually constructed by outside experts to ensure clarity and objectivitiy. Questions should be in areas where decisions need to be made and input from the parents or community is needed to make the proper choice. Questions could include the following sample topics:

- Should the emphasis of the counseling program be on career counseling or personal counseling?
- Should the transportation policy be changed to increase the distance walked before busing is provided in order to reduce costs?
- Select from a list of choices where additional funds, such as lottery funds, should be spent.
- Should extra-curricular sports continue to be supported at the current financial level by the district.

THE THREE YEAR PLAN DEVELOPMENT PHASE

The first component of this phase is the completion of program descriptions. Every major operating program in the district is included. Each is described in enough detail to ensure that district policy makers as well as the community can easily understand how the program operates and the major functions performed. The description should include the number of students served, the number of certificated and classified staff and the budget allocation. RCM budget descriptions would be ideal for this pupose. The budget data should indicate the source of the revenue, whether general fund and discretionary or categorical and restricted, and the expenses should be divided between personnel and non-personnel costs.

The program descriptions are completed by the appropriate program manager and should be reviewed by an administrator within the district to ensure accuracy and consistency. The descriptions should be long enough to clearly explain the program but not so long that they become itemized program plans or philosophical statements. The budget data should be provided by the district fiscal office and reviewed by each program manager as part of the description process.

PROGRAM PLAN. In the next step of this phase, the mission, trend and market information are combined with descriptions of current programs to form the basis for long range program planning. The critical step in the planning process is the planning meeting where the Board and the administration actually set the major directions for the District and develop a long range plan for each program. The major directions are set at this meeting and are used as each program plan is developed to assure that each program fits into the overall plan. Each program is described as it is envisioned to be in the next three years. A specific set of tasks is then developed to be accomplished in the next year to advance the program towards its specified goals. Once the Board and the administration have completed this step, the information is made available for review and comment by the staff, parents and community.

THREE YEAR PLAN. On the basis of these program descriptions, the Board and the administration jointly develop overall directions for the district for the next three years. A list of five to ten major directions that have been agreed upon by consensus should evolve from this process. The following example of major directions for a unified district were developed at a three-day planning meeting of the Board and the administration:

Instruction:

- Restructure and reorganize the high school program to improve the efficiency and delivery of programs.
- Rethink the course of study for general education at the high school level.

Integrate technology into the instructional program.

Personnel:

- Restructure the use of personnel in order to increase their efficiency.
- Effect an overall reduction of personnel through increased efficiency, particularly in the administrative and support areas.
- Meet the compensation commitments made to employees.

Financial:

- Pursue fiscal stability.
- Develop a program budget and provide for program fiscal accountability.
- Work to establish fiscal credibility and to increase local funding.

Management:

- Integrate technology into management and support systems.
- Improve the maintenance and utilization of district facilities.
- Build a committed workforce and increase the involvement of all staff in the decision making process.

Once the major directions have been formulated a three year plan is developed for each program. These plans are developed after fully reviewing the program mission, the trends that will affect the program, any market data gathered for that program and the current operations and resources. Input is provided at the meeting by the program manager along with any prior information gathered from the program staff. Overall district directions are used as the basis for determining if the program will have any specific directions that are necessary to ensure that the program will be moving with the total district over the next three years.

The directions set for each program must then be turned into action plans. At the planning meeting, the Board and the administration identify the tasks that need to be done in the following year to move the program toward the identified directions. Primary input for these tasks will come from the program manager, who best knows the operation of the program, but there can be significant influence by the rest of the administration and the Board.

PROGRAM OBJECTIVES. Each task for the following year will be described in the form of specific objectives. These will include a description of what is to be done, by whom, by what date and with what resources. This information for each of the basic programs will be prioritized to guide the final budgeting process. Objectives are written by the program manager or staff who will carry them out. The objectives should be specific and measureable and should include all anticipated resource needs.

The presense of an RCM program cost base and the simulation model could greatly assist this step of the strategic planning process. While many program managers will have the best understanding of local resource needs, they seldom have a vehicle for translating their needs into budget documents or budgeting processes in which they can actively participate. Within the context of strategic planning, the RCM could provide a more accurate picture of alternative programmatic resource requirements. Such data would allow policy makers to make better decisions and to more effectively allocate resources.

THE MONITORING AND REVIEW PHASE

In this phase, the completed directions, tasks, and objectives are integrated into an overall planning document and a final review is conducted. A supplemental listing of the program objectives, the required resources and the assessed workload on each administrator is helpful in this review. The first year in a comprehensive planning process can result in a set of tasks which may be too optimistic and can significantly overload administrative and program staff. Therefore this listing of resource requirements and workload assessments should serve as a check to ensure that both fiscal and personnel resources are realistically available.

All program tasks may not be possible within the available resources so priorities will have to be established. This process is much easier now that each program has been reviewed and directions have been established. In this context, a clearer assessment can be made of the impact of reduced resources. Priorities should be set in terms of which programs should receive additional resources. Priorities should also be set for each task, particularly those which require additional resources, within each program. This process will allow a final plan to be adopted that is realistic within the overall district budget.

The plan can be monitored through a chronological task list that identifies the tasks to be accomplished by program and by date. This allows administrators to regularly review the status of each program plan and to take corrective action where necessary.

There should also be a mid-year review to describe the status of each task. Problem areas should be identified and recommendations made for modification or deletion of tasks to ensure that the plan stays within the resources available and can be accomplished on time. There is a tendency for people who are behind schedule to lose incentive or give up rather than to reassess and realign so that the schedule can be met.

IMPLEMENTING STRATEGIC PLANNING

The implementation of a comprehensive planning process is an incremental process that will require a number of years before it is fully implemented and operating efficiently. The most critical element is the commitment of the district superintendent. The Board must be willing to participate and should believe that a planned approach to the future will assist them in their policy and decision making role. But, it is the superintendent that must coordinate the planning process, provide incentives for the staff by indicating that the results of the plan will be used and direct the implementation of the plan. Care should be taken to not overload the management staff but at the same time it should be indicated that planning is a normal part of every manager's job.

The first year of planning is one where every program is reviewed and initial directions are set. This is where programs are identified that should change direction or be modified. The plan should identify additional information needed and the development of alternatives so that in the second planning cycle, actual program changes can be determined and directed. Program changes can be made during any planning year but major modifications usually take more than one year.

Historically most educational organizations have focused the vast majority of their energies on solving day-to-day problems. Little time has been reserved for short term planning and almost no time to the development of carefully considered long term planning systems. The planning functions that do exist are most often focused on the development of program based budgets or are limited to programs in a categorical fashion. School districts seldom reserve time or resources for the more comprehensive consideration of where they are going and how they might best utilize existing resources to arrive there. Strategic planning processes and RCM cost data are two important elements to improving efficiency in resource utilization. Just as the best laid plans are not likely to be realized without accurate cost information, better cost data alone will not assist the district without a well conceived plan for using them.

CHAPTER 6

THE PROTOTYPE RCM DATABASE

INTRODUCTION

A critical factor in increasing the efficiency of implementing the RCM is to reduce its labor intensity. Much of the required personnel time comes in the form of the committee work described in Chapter 3. In applications where educational standards are being developed or where organizations are evaluating present practice, relatively lengthy deliberations are undoubtedly quite appropriate and are an important element of ensuring well considered results. In simpler expenditure studies there may not even be a process component. Regardless pf the eventual process, however, an important element in reducing the labor intensity involved with the analysis component of this approach is the acceleration of the construction of the initial data base.

For this reason, in employing the "ingredients" method to educational cost analyses, there are important advantages to be gained by starting with a prior model of the expected ingredients. While the high level of detail of such an approach affords considerable advantages, these data requirements can also represent formidable obstacles to timely completion of the analyses at reasonable levels of cost. Through the application of the RCM in a variety of educational settings, we have observed that much of this detail can be generalized. Thus, in trying to make this cost analysis tool itself more cost-effective, we have developed models of classrooms, schools and school districts. These models include personnel and nonpersonnel resources. Although it is not contended that these models can or should be generalized to the nation, it has been our intention to derive reasonable estimates of the resources that might be found in alternative educational program and service settings.

The major idea underlying the development of this prototype data base is that by entering a project with a complete set of prior specifications the researchers could simply alter them to reflect local variations rather than repeatedly engage in the time consuming and labor intensive process of modeling every new educational setting ingredient by ingredient. You will not be surprised to find, for example, that a high school chemistry lab in Hartford looks much like its counterpart in Seattle. While the job of organizing and listing all of these ingredients, to include quantities, years of life, and replacement values of equipment is formidible, once this has been done, much on this list will be applicable to chemistry classes everywhere. The major factors that will affect the relative costs of these two labs are class size and the percent teacher allocation to the class. Thus, in utilizing the prototype, these two features would clearly need to be altered to reflect local policies. The rest of the prototypical specification, e.g. quantities and prices of particular equipment items, could be reviewed and edited to the extent appropriate for a given application.

The purpose of this chapter is to present four products from the RCM Prototype Database. These range from very aggregative equipment and construction cost factors that allow relatively rough estimates of these costs and that can be derived with minimal levels of data and effort to highly detailed prototypes of the personnel and nonpersonnel resources that could be associated with various instructional and administrative programs and services. This chapter will describe the development of these products as well as the products themselves. It will conclude with a discussion of possible uses of these products and proposed areas for further development.

EQUIPMENT COST ESTIMATION IN PRIOR RCM STUDIES

In attempting to develop detailed cost descriptions of educational programs and services, the most cumbersome component is the listing and pricing of equipment. Although our equipment inventory data suggest that annualized equipment costs only constitute approximately 2% of overall educational expenditures, the overall investment in equipment for education is not trivial and can be an important component in distinguishing between the alternative costs of programs. Thus, despite its relatively small share of the budget, deletion or distortion of equipment costs can significantly affect differences in educational program cost estimates.

This problem is magnified by the fact there is no good substitute for listing and costing individual equipment items. An examination of prior years' expenditures on equipment, for example, does not provide good indications of the equipment cost of a program or service. This is the most common procedure used by "accounting-type" approaches to educational cost estimation. As accounting records seldom associate equipment items to individual programs or amortize the costs of these items over their actual expected lives, estimates of equipment costs based on such records will only reflect what has been spent recently and will not be recorded at the program level. If the district has just engaged in a large buying cycle, current equipment expenditures may significantly overstate actual equipment costs and if they have been deferring these costs no equipment expenditures may be shown, even in areas where actual equipment costs are high.

In prior applications of the RCM we have dealt with this problem in several different ways. In the state-level studies of Illinois and Alaska, the expectation was that each of the program specification committees would produce detailed equipment lists and prices for each of the program models specified. In neither study were the required equipment lists developed systematically or with consistency.

While each committee made some attempt to resolve these issues, the tediousness and level of detail required in listing eqipment quantities and prices generally caused most of the committees to defer the full completion of this task. The efforts of these educational practitioners, who were already volunteering time from busy schedules, was best spent on the arduous tasks of deriving agreement on "appropriate" lists of education programs for each state and assigning class size levels of personnel resources and dollar amounts for supplies and materials, travel and purchased services. Having finally reached agreement in these difficult areas, there was seldom any time or energy left to specify equipment requirements.

Listing the equipment quantities and prices for an elementary classroom, for example, requires subjective determinations regarding reasonable quantities and the research of current prices. A comparable listing for a chemistry lab is more difficult and the job becomes extremely complex when attempting to develop generalized lists of equipment needs for a district business office, transportation barn or warehouse. Thus, the equipment cost data for these two state studies were of varying quality at the instructional levels and were weak at the administrative and support levels. In a few instances, however, research staff were allocated for this purpose and highly detailed equipment listings were produced. The vocational program equipment listings for Alaska, for example, were developed by personnel from the State Department of Education in that State and are the basis for some of the vocational program specifications in the RCM Prototype.

The studies in Illinois and Alaska lasted twelve and eighteen months respectively. More recent studies conducted for the federal government across eighteen states and studies in California and Connecticut have been on a much tighter timeline. The nature of these studies made it necessary to construct the databases in these districts quickly. The objective of the federal study is to determine expenditures on individual special education programs and at the same time to gather data on expenditures in all other programs and administrative services in 60 sample districts. Because special education was to be modelled in detail, prior listings of possible equipment items were preprinted for each program as a basis for assisting the participants to specify programmatic equipment needs. All of the other instructional and administrative services in the district beyond special education were specified in a much more aggregative fashion. As there was no time to specify detailed listings of equipment in those areas and as program by program cost information was not required outside of special education, equipment cost factors were developed for use in this project. These factors have been further refined and represent one of the RCM Prototype products to be described later in this chapter.

PROTOTYPE DEVELOPMENT

Through our efforts to develop these equipment cost standards we came into contact with American Appraisal Associates, Inc., (AAA). AAA is a valuation consulting firm specializing in tangible and intangible property and replacement cost information services based in Milwaukee, Wisconsin. This very large consulting firm reports on over $100 billion in assets annually and serves public agencies as well as private businesses. Many of the public school districts of the nation are clients of AAA. A major service that AAA provides school districts is a computerized inventory of all school district equipment.

The initial step in obtaining this inventory data base is a physical inventory by AAA appraisers of all equipment beyond a certain specified value. During this process, these appraisers either record the original purchase price of the item or estimate it on the basis of stadardized appraisal methods. A "useful life" figure is also assigned to each item and the "new replacement cost" (NRC) is calculated through the application of a set of trend factors developed by AAA. This inventory is updated through periodic future visits to the district or through the submission of annual listings of new equipment purchased by the district. Also, the inventory file for a district can be entirely updated to produce an estimate of replacement costs at any point in time using "trending factors," a product AAA has developed for this purpose.

To derive estimates of equipment costs for the federal study, full inventory data bases were acquired from AAA for four California school districts. This analysis was limited to four districts due to the cost of procuring these data from AAA and the cost of processing the large equipment data base maintained for each district (the data set for the largest district contained over 46,000 records). It was also believed that the highly detailed data base obtained from these four districts would be sufficient to derive the equipment cost factors. These factors will be described in more detail in this chapter. AAA is also the source of the construction cost data to be presented.

Subsequent development of the AAA data also provided the primary basis for the detailed equipment prototypes to be presented in this chapter. These highly detailed school district inventories contained location, current replacement price and estimated years of life data. Unfortunately, although these data contained all of the elements needed to construct a prototypical equipment listing by location, because these data bases were constructed for other purposes they often did not conform to our needs. For example, the location for many of the items was listed as "throughout the building" and many of the prices were inconsistent and occasionnally highly irregular, e.g. a work table priced at $45,000. Thus, although the AAA data provided an important beginning to this work, much reorganization, cleaning, coding and refinement was required. In addition, the AAA data were not sufficient in such specialized areas as special education, vocational, bilingual and compensatory programs. Data for the completion of the prototypes in these areas came from data gathered through our various other "ingredients approach" studies.

It is important to note that the prototype products to be presented in this chapter clearly have limitations. No contention is made that they can be generalized to the nation or that they are in any way reflective of exemplary practice. They are intended to provide reasonable estimates of the equipment configurations that might be found in alternative educational settings as a basis for estimating their costs. They are designed to be reviewed and to be modified to reflect individual circumstances to the extent that this is possible or reasonable for individual applications. It is also hoped that through use and over time these specifications will increasingly provide reflections of reasonable or recommended practice and will lead to a better understanding of how the school districts of the nation allocate personnel and nonpersonnel resources to accomplish their educational mission. Hopefully, such a database could ultimately also allow individual districts to compare local practices with national norms as the basis for evaluating current resource allocation patterns.

RCM PROTOTYPE PRODUCTS

EQUIPMENT COST FACTORS. Detailed equipment listings will not be appropriate for all educational cost studies. In some cases, reasonable, efficient, low cost bases for determining annualized costs for equipment are needed. As discussed, basing this estimate on prior expenditures in this area will often grossly over or under estimate these costs. Although equipment costs are estimated to only represent 2% of the overall costs of education, a reasonable basis for estimating these costs by program and administrative function is required that will not distort the overall cost analysis product.

In the federal special education study, for example, a full-fledged research effort to measure actual capital and equipment costs across sixty school districts would have required a level of effort and expense which would have greatly exceeded the importance of these data in the context of the study. Thus, it was necessary to place distinct limitations on the scope of this effort. It was for this project that equipment cost factors were first developed.

The basic concept behind such factors is that relatively standard configurations of equipment are found in school districts and that the amount of this equipment will be directly related to the total square footage of the district. If we can derive reasonable estimates of the annualized cost of equipment per square foot and how this amount will change with district size, we have a simple, straightforward way for estimating annualized equipment costs.

In developing these factors we first considered the importance of district location and size, two elements generally thought to be important in measuring variations in equipment costs. In considering locational factors, prior education cost studies conducted by this research team have revealed relatively little regional variation in equipment costs. Also, when asked about a cross-sectional index, to adjust for such regional price variations, AAA indicated that they did not have such an index because in their opinion and experience, these variations were not significant.

Thus, it was decided to forego attempts to capture regional variation, which would have required a much more extensive collection of districts, in an attempt to concentrate on the impact of district size on such variations. For this reason, we attempted to hold regional differences constant by obtaining four districts from the same county of the same state. Other selection criteria were the same dollar cut-off for items to be included in the inventory, which turned out to be all items over $200 in value, and the inclusion of all grade levels K-12. The four districts selected are all unified school districts in Los Angeles County, California, with enrollments of 2, 10, 20, and 30 thousand students. It was believed that most of the economies and diseconomies of scale would be captured within this size range.

To give some indication of the level of detail found on these files, there were more than 88,000 individual furnishing and equipment items from the four inventory files. The prices for each of these items were "trended up" to reflect June 1985 prices.

Annualized equipment costs were determined for each of the AAA districts by school level and for overall district administration. First, the current replacement prices for all of the equipment items found on these three files were divided by the number of years of "useful life" estimated for each item by AAA. These "useful life" data are contained on each equipment record. All of these annualized prices were then aggregated to the individual school type and overall administration levels listed above.

Table 6-1 shows the annualized administrative equipment costs by square foot of administrative space in each of the four AAA districts. Column 1 is the approximate enrollment in each of these four districts and Column 2 shows the total annualized administrative equipment cost to the district.<1> This cost figure was derived by taking the "new replacement cost" (NRC) of each equipment item listed in each building designated as housing a central district administrative function.<2> For example, the total annualized cost of equipment in all of the central administrative buildings for District 1 is $10,728. Column (4) shows the total square footage of floor space in these same administrative buildings in District 1. Column (5) is the quotient of Column (3) divided by Column (4). Thus, in District 1, the average annualized cost of administrative equipment per square foot of administrative space is $1.1525.

TABLE 6-1

ANNUALIZED ADMINISTRATIVE EQUIPMENT COSTS
BY SQUARE FOOT OF ADMINISTRATIVE SPACE
IN DISTRICTS AT FOUR SIZE POINTS:

(1)	APPROXIMATE ENROLLMENT * (2)	TOTAL ANNUALIZED EQUIPMENT COSTS (3)	TOTAL ADMIN. SQUARE FEET (4)	AVERAGE COST PER SQ. FT. (5)
DISTRICT 1	2,000	$ 10,728	9,308	$1.15250
DISTRICT 2	10,000	$ 51,054	46,793	$1.09106
DISTRICT 3	20,000	$118,478	129,807	$ .91272
DISTRICT 4	30,000	$ 92,687	145,677	$ .63625

The average cost data in Column (5) reflect the expected economies of scale. As district size increases the average cost of administrative equipment decreases. In examining the cost indicators shown in this column, however, the limitations of these data must be kept in mind. As these four estimates are drawn from four individual observations, any irregularities observed in this curve are not surprising. A smooth curve would not be expected from a sample limited to four sites.

For the purposes of the federal special education study it was assumed that the full impact of scale was realized at the upper and lower size boundaries of these four districts. Thus, an administrative cost per square foot of $.63 has been assigned to all districts at or above 30,000 enrollment and $1.15 to all districts at or below 2,000 students. All districts with enrollments falling between these two enrollment boundaries have been assigned a cost of equipment that is based on the estimates shown above. Thus, a district with an enrollment of 25,000 students has been assigned an estimated equipment cost of .77449, which is midway between the cost estimates shown for districts with 20,000 and 30,000 students.

Table 6-2 shows how these district administrative cost factors were applied to the sample districts in the Connecticut study.

TABLE 6-2
ANNUALIZED DISTRICT ADMINISTRATION EQUIPMENT COSTS PER SQUARE FOOT ASSIGNED TO FIVE CONNECTICUT DISTRICTS

DISTRICT	ENROLLMENT	# OF SQ FT	COST/SQ FT	ESTIMATED ANNUAL EQUIPMENT COSTS
1	13,176	30,900	$1.034	$31,951
2	4,238	22,000	$1.136	$24,992
3	2,527	5,600	$1.149	$ 6,434
4	23,626	30,000	$ .812	$24,360
5	5,360	16,875	$1.127	$19,018

At the school level, it was not possible to distinguish between the equipment items used in conjunction with administration as opposed to instructional equipment. Thus, all of the equipment found in each type of school are included in the cost estimates shown in Table 6-3. For this reason, no scale effect could be isolated within the three school types. While school adminstrative equipment costs per square foot of administrative space could be expected to decrease as school size increases, this relationship would not be expected to hold for instructional space. For this reason, data from the schools within each school type across all four districts were averaged together to derive the largest data base possible for distinguishing costs among these three types of schools.

TABLE 6-3

ANNUALIZED SCHOOL ADMINISTRATION AND INSTRUCTIONAL EQUIPMENT COSTS BY SQUARE FOOT OF SCHOOL SPACE IN THREE SCHOOL TYPES

TYPE (1)	NUMBER OF SCHOOLS (2)	TOTAL ANNUALIZED EQUIPMENT COSTS (3)	TOTAL SCHOOL SQUARE FEET (4)	AVERAGE COST PER SQ. FT. (5)
ELEMENTARY	43	$ 346,708	1,912,534	$ 0.181282
JUNIOR HIGH	13	$ 523,890	1,107,605	$ 0.472994
SENIOR HIGH	8	$ 657,908	1,535,571	$ 0.428445

The columns shown in Table 6-3 and the method used to derive the annualized square foot cost of equipment are comparable to those described for Table 6-2, above. Column (2) shows the number of schools reflected in each of the three school types shown below. As shown in Column (5), there is a pronounced distinction in equipment costs per square foot between elementary schools and the other two school types. The smaller distinction between the Junior and Senior High School categories is somewhat counterintuitive, with the Junior High category exhibiting somewhat higher costs, but is also relatively negligible.

For some studies, the substitution of all detailed equipment cost analyses by these cost factors would be the most cost-effective manner for dealing with the equipment cost question. For other studies, where precision is most important at the program level, it might be preferable to mix the use of detailed specifications for instructional programs and services with cost factors at the administrative levels. In cost investigations where high levels of detail and precision are important throughout it may be most appropriate to begin the data gathering with sets of prespecified, highly detailed instructional and administrative prototypes.

THE EQUIPMENT PROTOTYPES. The equipment prototype is organized around a concept that we refer to as "equipment location modules." Such a module refers to a location that may be one or more rooms but which is centered around a particular focus or function of a school or district administrative function or service. Each module has a location code. The current prototype outline divides the district into four major types of locations: district office, elmentary, junior high and high school. Each of these locations is then divided by division, function and subfunction. As an example, the list of elementary school equipment location modules is shown in Table 6-4. Note that Table 6-4 is also an outline of the elementary school location module coding structure. Actual equipment modules are only specified at the functional and/or subfunctional levels, as designated by asterisks.

Two sample modules are shown in Table 6-5 from the Elementary School Prototype. The first is an administrative location, the central office, and the second is a model of a regular, self-contained classroom, grades 1-6. The first column for each indicates the location code which conforms to the outline shown in Table 6-4.

The item code allows each item to be matched with the Master Price List. This insures uniformity of pricing throughout the prototype and is also the central file for years of life and price data. There are several advantages to separating the Master Price List for the equipment modules. The review of these modules, for example, might best be done by a teacher or program

TABLE 6-4
AN OUTLINE OF THE ELEMENTARY SCHOOL EQUIPMENT LOCATION MODULE CODING STRUCTURE

- E. ELEMENTARY SCHOOL
  - A. ADMINISTRATION AND SUPPORT
    - 1. ADMINISTRATION
      - 10. PRINCIPAL'S OFFICE •
      - 20. CENTRAL OFFICE •
      - 30. TEACHERS LOUNGE •
      - 40. AV/EQUIPMENT ROOM •
      - 50. AUDITORIUM •
    - 2. SUPPORT SERVICES
      - 10. COUNSELING •
      - 20. HEALTH SERVICES •
      - 30. PSYCHOLOGIST •
    - 3. LIBRARY SERVICES •
    - 4. FOOD SERVICES •
    - 5. MAINTENANCE AND OPERATIONS •
    - 7. SECURITY/SUPERVISORY SERVICES •
  - C. COURSES
    - 1. ACADEMIC
      - 10. KINDERGARTEN •
      - 20. CLASSROOM GRADES 1-6 •
    - 2. SUPPLEMENTAL
      - 10. ART •
      - 20. INSTRUMENTAL MUSIC •
      - 30. VOCAL MUSIC •
      - 50. PHYSICAL EDUCATION •
    - 3. BILINGUAL
      - 20. SELF-CONTAINED CLASS •
      - 50. RESOURCE PULL-OUT PROGRAM •
    - 4. SPECIAL ED
      - 10. PRESCHOOL/INFANT •
      - 20. SELF-CONTAINED CLASS
      - 21. COMMUNICATIVELY HANDICAPPED SELF-CONTAINED •
      - 24. DEAF AND HARD OF HEARING SELF-CONTAINED •
      - 27. LEARNING HANDICAPPED SELF-CONTAINED •
      - 30. ORTHOPEDICALLY HANDICAPPED SELF-CONTAINED •
      - 33. PROFOUNDLY HANDICAPPED SELF-CONTAINED •
      - 36. SEVERELY HANDICAPPED SELF-CONTAINED •
      - 39. VISUALLY HANDICAPPED SELF-CONTAINED •
      - 50. RESOURCE ROOM •
      - 70. RELATED SERVICES •
      - 72. ADAPTIVE PHYSICAL EDUCATION •
      - 74. AUDIOLOGY •
      - 76. BRAILLIST •
      - 78. OCCUPATIONAL THERAPY •
      - 82. ORIENTATION AND MOBILITY •
      - 84. PHYSICAL THERAPY •
      - 86. SPEECH •
      - 88. SPEECH FOR HARD OF HEARING •
      - 90. VISUALLY HANDICAPPED RELATED SERVICE •

TABLE 6.5
EXAMPLES OF ADMINISTRATIVE AND INSTRUCTIONAL PROTOTYPE EQUIPMENT LOCATION MODULES

LOCATION=CENTRAL OFFICE

LOCATION CODE	ITEM CODE	ITEM NAME	QUANTITY	PRICE	YEARS	ANNUALIZED COST
EA120	1200490	CHAIR SIDE	4	$38.00	15	$10.13
EA120	1200500	CHAIR STENO	4	$194.00	15	$51.73
EA120	1200510	CHAIR STUDENT SMALL	6	$10.00	12	$5.00
EA120	1200540	CHAIR TEACHER	2	$28.00	15	$3.73
EA120	0100100	COFFEE MAKER COMPLETE	1	$49.00	15	$3.27
EA120	0400310	COPIER	1	$593.00	15	$39.53
EA120	0400340	COPY MACHINE COMPLETE	2	$2.005.00	15	$267.33
EA120	1200670	CUTTER PAPER 15"	1	$50.00	10	$5.00
EA120	1200760	DESK STUDENT	6	$34.00	12	$17.00
EA120	1200780	DESK TEACHER	2	$195.00	20	$19.50
EA120	1200790	DESK TYPEWRITER	1	$396.00	15	$26.40
EA120	0400410	DUPLICATOR W/CABINET	1	$681.00	15	$45.40
EA120	1200890	FILE LTR 2 DWR	4	$113.00	20	$22.60
EA120	1200900	FILE LTR 4 DWR	2	$170.00	20	$17.00
EA120	0400520	MIMEOGRAPH	2	$1,325.00	15	$176.67
EA120	0100580	REFRIGERATOR 2CU FT	1	$177.00	15	$11.80
EA120	1201270	SAFE FLOOR	1	$648.00	15	$43.20
EA120	1201350	SOFA	1	$429.00	15	$28.60
EA120	1201630	TABLE OFFICE	2	$137.00	20	$13.70
	LOCATION					$807.60

LOCATION=CLASSROOM GRADES 1-6

LOCATION CODE	ITEM CODE	ITEM NAME	QUANTITY	PRICE	YEARS	ANNUALIZED COST
EC120	1200190	BOOKCASE 2-4 SHELVES	2	$152.00	15	$20.27
EC120	0300120	BOOKS REFERENCE	30	$57.00	5	$342.00
EC120	0200310	CASSETTE RECORDER FOR TRS	2	$1,991.00	10	$398.20
EC120	1200510	CHAIR STUDENT SMALL	30	$10.00	12	$25.00
EC120	1200540	CHAIR TEACHER	1	$28.00	15	$1.87
EC120	1200670	CUTTER PAPER 15"	1	$50.00	10	$5.00
EC120	1200760	DESK STUDENT	30	$34.00	12	$85.00
EC120	1200780	DESK TEACHER	1	$195.00	20	$9.75
EC120	1200870	FILE CABINET	2	$185.00	20	$18.50
EC120	1200940	FLAG SET W/STANDS	1	$118.00	10	$11.80
EC120	1200970	GLOBE 16"	1	$67.00	10	$6.70
EC120	1201070	MAP NORTH AMERICA	3	$110.00	15	$22.00
EC120	0200940	RECORD PLAYER	1	$135.00	15	$9.00
EC120	1201300	SCREEN PROJECTOR WALL	1	$65.00	10	$6.50
EC120	1201400	TABLE CLASSROOM SMALL	1	$145.00	15	$9.67
EC120	0300320	TEXTBOOKS HARD COVER	150	$10.00	5	$300.00
EC120	0300325	TEXTBOOKS PAPERBACK	60	$5.00	5	$60.00
	LOCATION					$1.331.25

administrator. While they will be knowledgable about quantities, they would probably not be the best source of review for prices. Thus, the Master Price List could be reviewed separately by the purchasing department. Through the addition and deletion of item codes and the editing of quantities, the price and life information on these modules can automatically be updated through merging with the Master Price List. AAA also develops inflation factors that can be applied directly to the Master Price List. Part of this list is shown in Table 6-6.

The price column lists the replacement prices for each of these items as recorded or assessed by AAA. Although the initial prices on these items reflected different points in time, all of the prices shown have been "trended up" by AAA to reflect current prices as of June, 1985. The "YEARS" column reflect expected years of life as determined by AAA. The annualized cost column reflects the quantity of each item multiplied by its price and divided by its expected years of life. At the bottom of each module, a total annualized cost is shown that is the sum of the annualized cost column for that location. Thus, the annualized equipment cost estimates for the central office and elementary classroom are $807.60 and $1,331.25 respectively. These amounts or the corresponding cost figures that would come from specifications that had been edited to reflect actual district practice would be placed directly into the respective adminstrative and program configurations. These will be described under the next heading in this chapter, the Personnel and Nonpersonnel Prototype Configurations.

Table 6-6 is a sample listing of the Master Price List. This table shows the structure and level of detail for this list. Currently, approximately 1,250 items are included in fourteen equipment classes. The first two digits of the item codes refer

TABLE 6-6

THE 14 EQUIPMENT CATEGORIES AND SAMPLES OF EQUIPMENT LISTINGS FROM THE MASTER PRICE LIST

	ITEMCODE	ITEM NAME	YEARS	PRICE
1.	APPLIANCES:			
	100190	COOLER MILK 24 CASE	12	890
	100210	DEEP FRYER TWIN BASKET	12	633
2.	AUDIO VISUAL:			
	200130	ANSWERING MACHINE	15	363
	200140	AUDIO/VIDEO ADAPTER KIT	15	124
3.	BOOKS:			
	300130	DICTIONARY CLASSROOM	10	13
	300160	FILMSTRIPS	20	9
4.	BUSINESS MACHINES:			
	400330	COPY MACHINE	15	4721
	400440	FOLDER AUTOMATIC	15	809
5.	LAB EQUIPMENT:			
	500810	FUME HOOD PORT	10	752
	500870	HELIUM NEON GAS LASER	10	526
6.	GROUNDS:			
	600150	HEDGE SHEARS ELECTRIC	15	119
	600180	PLANKTON NET #10 MESH	10	204
7.	MACHINES AND TOOLS:			
	701710	PRESS DRILL BENCH 14"	15	1123
	701780	PUNCH TURRET W/STAND	5	2690
8.	MUSICAL INSTRUMENTS:			
	800300	FRENCH HORN	15	600
	800380	PIANO SCHOOL	25	2000
9.	PHYSICAL EDUCATION:			
	901210	MAT GYM FOLDING 12X3'	12	153
	901290	RAQUETBALL RAQUETS	5	17
10.	STAGE AND AUDITORIUM:			
	1000120	RISERS BAND AND CHORAL	15	489
	1000130	SPOTLIGHT AND COLOR BAR	10	2590
11.	SPECIAL EDUCATION:			
	1100550	MATRIX COMMUNICATOR	10	1200
	1100980	WHEELCHAIR ELECTRIC	10	3500
12.	STANDARD FURNITURE:			
	1201450	STOOL STEP METAL	12	33
	1201620	TABLE STUDENT SMALL	15	46
13.	UNIFORMS:			
	1300200	UNIFORMS VOLLEYBALL GIRL LOT	10	3069
	1300130	UNIFORMS FOOTBALL PRACTICE LOT	5	13731
14.	VEHICLES:			
	1400350	TRAILER	12	4750
	1400410	TRUCK PICK-UP	15	7036

TABLE 6-7
SAMPLES OF ADMINISTRATIVE AND ADMINISTRATIVE COMPONENTS FROM THE ELEMENTARY SCHOOL PERSONNEL AND NONPERSONNEL PROTOTYPE

A. ADMINISTRATION AND SUPPORT			
ENROLLMENT	350	500	650
SQUARE FEET	35,000	50,000	65,000
1. GENERAL ADMINISTRATION			
PRINCIPAL, ELEM	1	1	1
PRINCIPAL, ASST. ELEM			1
ADMINISTRATIVE INTERN			
SECRETARY 12 MO	1	1	1
SECRETARY 10 MO		.5	1
PURCHASED SERVICES	$350	$500	$650
SUPPLIES AND MATERIALS	$350	$500	$650
UTILITIES	$52,500	$75,000	$97,500
EA110 PRINCIPAL'S OFFICE	$224	$224	$224
EA120 CENTRAL OFFICE	$807	$807	$807
EA130 TEACHERS LOUNGE	$227	$227	$227
EA140 AV/EQUIPMENT ROOM	$1,841	$1,841	$1,841
EA150 AUDITORIUM	$1,100	$1,100	$1,100
2. SUPPORT SERVICES			
SCHOOL NURSE	.5	1	1
COUNSELOR			.5
PSYCHOLOGIST	.25	.5	.75
PURCHASED SERVICES	$200	$300	$400
SUPPLIES AND MATERIALS	$200	$300	$400
EA210 COUNSELOR			$ 30
EA220 HEALTH SERVICES	$ 90	$179	$179
EA230 PSYCHOLOGIST	$ 15	$ 30	$ 60
3. LIBRARY SERVICES			
LIBRARIAN			1
MEDIA SPECIALIST		1	
LIBRARY CLERK	1		
PURCHASED SERVICES	$500	$750	$1000
SUPPLIES AND MATERIALS	$500	$750	$1000
EA300 LIBRARY SERVICES	$14,520	$19,230	$23,940
B. INSTRUCTIONAL PROGRAMS			
1. KINDERGARTEN			
ENROLLMENT	12	18	24
TEACHER	.5	.5	.5
AIDE		.25	.5
SUPPLIES & MAT	$480	$720	$960
EC110 KINDERGARTEN	$702	$720	$720
2. CLASSROOM GRADES 1-6			
ENROLLMENT	16	24	32
TEACHER	1	1	1
AIDE			.5
SUPPLIES & MAT	$800	$900	$1,200
EC120 CLASSROOM GR. 1-6	$1,331	$1,331	$1,331

to a class of equipment, e.g. 01 = Appliances. The last four digits are sequential listings to allow matching within each equipment class to the Prototype Location Modules.

THE PERSONNEL AND NONPERSONNEL RESOURCE PROTOTYPES. A major purpose of the Personnel and Nonpersonnel Resource Prototypes is to illustrate the form of the RCM Data Base. The listings below purposely leave out some of the detail of the specification worksheets to focus on the basic structure of the specifications.

Table 6-7 shows administrative and instructional samples of these prototypes. In this example, elementary schools are shown at three size points which are specified in both student enrollments and in square footage. The organization of the various prototypes also follow the Elementary School Outline shown in Table 6-4. For example, the first prototype listing, EA110, the Principal's Office, is derived from E (Elementary), A (Administration and Support), 1 (Administration), and 10 for the Principal's Office. Again the actual listings of resources are organized primarily at the function and subfunction levels. Each prototype follows the basic order of personnel resources, specified in FTE (full time equivalent) quantities, dollar allocations for purchased services, supplies and materials, etc., and the equipment modules to be included in the prototype with the total annualized cost of each. Once full salary and benefit information are added to these configurations, the full cost of each could be calculated.

A fractional portion of an Equipment Location Module, a full Module or more than Module are included in each prototype. The location codes for each of these modules are listed within the appropriate prototypes along with their total annualized costs. Module EA150, Auditorium, for example, is listed under the

General Administration Prototype. This is a distinct Equipment Location Module because a specific and distinctive set of equipment is found in this location. As no personnel are assigned to this location, however, it is best tied into a larger prototype listing. One important reason for keeping these equipment locations distinct, even though no personnel are assigned to them, is that a given elementary school may not have such a facility or may use a "multi-purpose" room as an auditorium. By attempting to model the Equipment Location Modules as schools are actually organized, to the extent possible, it becomes easier to match the prespecifications to the actual practice of the school.

There is an attempt to show scale effects in most of the resource listings of the prototypes. An Assistant Principal is only listed at the largest elementary school, for example, and the allocation of the 10 month secretary increases from 0 to 1 as school size increases. For the most part, no attempt has been made, as yet, to approximate these scale effects in the equipment modules. $1,841 is currently assigned to the AV/Equipment Room for schools at all three size points. While this is counter to what one would expect to see in actual practice, it would not be practical to make differing specifications at all possible size points. While eventually, these specifications could be modified to show the expected effects of scale, in its current form, the equipment prices would simply be accepted at the average size specification or would be modified to reflect actual practice to the extent possible.

In two of the examples in Table 6-7 scale effects are modelled in the equipment modules, however. This occurs in the library and for the support services. In the area, Library Services, the number of volumes has a large impact on the overall predicted library equipment cost. One set of recommendations pertaining to number of volumes suggests a standard of 20 volumes per student. Using this standard, library equipment costs are shown to vary at the three library size points. Also, in the area "Support Services" only partial personnel allocations are shown in certain areas and consequently only fractional parts of this Equipment Location Module are shown. As the total annualized cost of such a module is $60, only fractional parts of this amount are assigned at the differing size levels to correspond with the differing quantities of personnel assigned. This assumes that a fractional person uses less equipment or that these items are used in some other capacity when the support person is not in the school. These assumptions are, of course, subject to review and could be specified otherwise.

CONSTRUCTION COST FACTORS. While capital construction costs are most often deleted from educational costs analyses, in some applications it becomes necessary to approximate these costs. In the federal special education study, a manual for appraising a variety of types of buildings, including schools, was obtained from AAA for the purpose of deriving construction cost estimates. The BOECKH, Building Valuation Manual, contains base construction prices per square foot for a set of prototypical school building construction types.<3> Base school construction prices per square foot are given for six basic school building types and five wall types, as shown in Table 6-8. For the purpose of applying this base price data to the buildings in the sixty sample school districts in the federal study, the average of the base prices shown in Table 6-8, $37.65, was used.

"Time Location Multipliers," are also included in the AAA manual. These can be used to adjust the base construction cost by time period and zip code location. For example, to estimate the replacement cost of a one-story, steel frame school in Cincinnati, Ohio in July of 1985 a "time location" multiplier of 1.56 is given. Thus, the estimated replacement cost per square foot of floor space for such a school in Cincinnati in July, 1985 is $58.73 (Base Price of $37.65 multiplied by the 1.56 Time Location Multiplier). Comparable time location multipliers for two other study sites are 1.92 for Los Angeles and 1.32 for Jasper, Texas.

TABLE 6-8

AAA SCHOOL CONSTRUCTION BASE PRICES PER SQUARE FOOT

	WOOD/ STUCCO	CONCRETE BLOCK	BRICK & BLOCK	COMMON BRICK	PRECAST CONCRETE PANELS
1 STORY - LOAD SUPPORTING WALLS, POSTS AND BEAMS:	$34.21	$34.37	$36.50		
1 STORY - STEEL FRAME:		$37.70	$39.83		
2-4 STORY - LOAD SUPPORTING WALLS, POSTS AND BEAMS:		$34.00	$36.13	$36.63	
2-4 STORY - STEEL FRAME:		$36.60	$38.75	$39.26	
2-4 STORY - FIREPROOFED STEEL FRAME:		$38.70	$40.84		$41.08
2-4 STORY - REINFORCED CONCRETE FRAME:		$37.05	$39.06		$39.28

In the federal study, square footage information was obtained for each sample district. These data and the district zip code location allowed the estimation of current replacement costs. To derive an annualized estimate of capital costs in this study, the estimated replacement costs were divided by a life of 40 years, the average of the life estimates cited by AAA for capital construction.<4>

Thus, if a district in Cincinnati had a total of 1,000,000 square feet of floor space, the annualized cost to be attributed to capital construction in that district would be the adjusted base price per square foot of $58.73 multiplied by 1,000,000 square feet. The result would then be divided by 40 years to produce an annualized capital construction cost estimate of $1,468,250.

USING THE PROTOTYPE PRODUCTS

DISTRICT LEVEL ANALYSES. There are a number of reasons why individual school districts may wish to build an RCM Database. Such a database might be designed for permanent maintenance within the district to serve as the basis for annual program review and budgeting procedures as well as other planning and policy purposes. Some form of the Database might also be established for more limited, short term applications. Perhaps such program cost data are only desired for a component of the total district operations, e.g. for special education programs. Or, the district may wish to employ such an approach to analyzing the cost consequences of a specific policy option, for example, the cost consequences of opening or closing a school.

In any of these circumstances, it is unlikely that applications of the RCM for a single school district would entail the use of the full personnel and nonpersonnel prototype specifications as shown in Table 6-7. Such generic models of school district organization would be of little use in such applications as the database would always be designed to mirror the actual organizational patterns in the district, and/or perhaps the proposed alternatives to the existing order. Exact personnel allocations and direct, nonpersonnel dollar expenditures would be known. Thus, in analyses for a single district, only the location equipment modules and the equipement cost factors would be likely to be useful.

Whether the aggregative cost factors or the more detailed modules would be used, would depend on such factors as the level of detail required in the study, the resources available to conduct the study, the timeline for the study and the preexistance and condition of actual inventory data for the district. If the district had already contracted with AAA, for example, and had a computerized current inventory file, the derivation of annualized equipment cost estimates by program and administrative service should be relatively straightforward. If no current inventory is available in a form that would be useful for these purposes, however, which is often the case, one of these two RCM products might serve quite useful as a basis for providing a reasonable estimate of annualized equipment costs at specific program and administrative service levels.

STATE LEVEL ANALYSES. The ultimate purpose of many state level studies is the development of a set of cost or funding standards that are reflective of the state. In such instances district level models must be constructed that are generic to the state. They will not fit any one district of the state exactly, but must be representative of the state as a whole by reflecting the kinds of variation found throughout the state. In such studies, there is no existing entity to study and model, but a number of alternative district profiles to be represented through the development of one or more models. The development of models that are generic to a given state represents a more difficult and subjective task than that of mirroring an existing entity. In such cases, the use of prototypes for personnel and nonpersonnel resources would constitute an important foundation that should accelerate the develpment of these statewide prototypes. The theory is that the alteration of existing prototypes to best reflect a particular state is a much less formidable task than the construction of such a model from blank worksheets.

Also, in such studies, reasonable estimates of equipment costs will be more appropriate than the detailed formulation of lengthy equipment lists. This will be especially true at the administrative levels. At the program levels, if detailed equipment listings are desired, the formulation of these lists will also be considerably accelerated by the existance of the Equipment Location Modules that the Program Committee Members can simply react to rather than completely develop from scratch. Also, if the administrative cost factors, which were developed from California districts, were deemed inappropriate for application in another state, alternative cost factors could be developed using inventories from the state in question, if such existed.

PILOT PROJECTS AND EXPENDITURE STUDIES. Some studies may actually be conducted at the district level, but be sponsored by state or federal agencies. These generally involve modelling multiple districts, but may not call for the development of standards. The federal special education study, the Connecticut project and a project of private special education schools in California all fit this description. In such studies, the use of cost factors may be most appropriate as a method for providing low cost estimates of equipment costs at both program and administrative levels. Or, the use of cost factors could be combined with detailed equipment listings at the level of individual programs or wherever more highly detailed or more exacting equipment cost estimates may be required. In the national special education study, for example, detailed equipment listings were used only for individual special education programs. For all other instructional and administrative configurations cost factors were employed.

OTHER APPLICATIONS. Two additional applications that could potentially be of significant use to the education industry, but which would require considerable further development, are the use of these models for evaluation and insurance purposes. Both of these applications would require considerable additional research and development to extend the prototypes to the point where they could be described as representative of national practice, or some standard of acknowledged exemplary practice.

The component of potential use as an evaluative tool is the personnel and nonpersonnel configurations. If sufficient data of this type could be found to be deemed generalizable to the nation, it could be accumulated into an RCM database and could represent an important diagnositc evaluation tool for the school districts of the nation. In evaluating their current resource allocation practices, for example, it would seem extremely useful for districts to know how their current practices compare to districts that are similar to them on selected criteria, in their region of the state, throughout their state and across the nation. Are they relatively administratively heavy? At what levels of job classification? How do their program by program class size standards and other resource allocation data compare?

While some data of this type already exist that can be used for comparative purposes, they are generally in too aggregative a form to be useful for policy analysis. Knowing that a district spends less than the statewide average is probably less useful than knowing how other districts are coping within these constraints. Have other districts developed resource allocation approaches that might assist your district in using limited resources more efficiently? A proactive component to such information might be that a better case for increased assistance from the state might be made if it can be shown that your district is receiving less to show how this impacts on specific resource levels in individual programs and services.

For insurance purposes, the existance of prototypical equipment configurations that truly can be said to be representative of "average" schools, might considerably cut the cost of establising and maintaining inventories for insurance purposes. Creating and updating such files must add considerably to the cost of being properly insured. To initially create such a data file, a district will most often contract with an appraisal firm, such as AAA. AAA must send specially trained inventory and appraisal personnel to the school district site to physically count and match invoice information or appraise all major equipment items in every room of all the schools and administrative offices throughout the district. For the district in our AAA database with 30,000 students this process included over 46,000 items of equipement. Once these data are gathered on site, all 46,000 lines of data must be keypunched into the AAA computer.

Thus, the establishment of this initial database is a very costly enterprise. Once established, however, assuming that new purchases are now entered into computerized files in many, or most, of the school districts of the nation this inventory file should be fairly easily maintained.

It would seem that the existance of a prototype could accelerate this initial inventory process considerably. For example, if a primary purpose of these data is to establish how much the district should reasonably be able to collect in equipment replacement costs if one of its schools burns down, a prototype could conceivably give comparable information at much less cost. If the district and the insurance company could agree in advance, for example, that its schools are not unusual in terms of the equipment items they contain the prototype could be used in lieu of the inventory for insurance purposes. A second possibility could be a much accelerated prior inspection process to assess the suitability of a given prototype to represent a given school. This would provide the safeguard of personal inspection without requiring the expense of complete room by room inventories. Through such processes, the inspection and inventory time could be vastly reduced, and as it would result in the alteration of an existing database rather than the creation of a new one, the keypunching requirements would also be considerably diminished.

Other possible applications to the insurance problem could be portrayed. Suffice it to say here, however, that through the development of a more thorough and reliable prototypical database it would seem that considerable cost cutting measures could be incorporated into the highly labor intensive and costly school equipment inventory process.

FURTHER DEVELOPMENT

As many of the anticipated future areas of development for these prototype products have been described throughout this paper, we will only summarize in the conclusion to this chapter. In their existing form, these products have proven quite useful in expediting database development for cost analyses studies. Additional refinements could be added through the general expansion of the data base to include an even broader range of Location Equipment Modules and refined technologies about how to fit these modules to districts of varying sizes. It will also be important to begin development of simulating the effects of scale on the prespecified resource quantities in instructional programs and administrative services of varying sizes. AAA has equipment inflation factors that will be essential to keeping the Master Price List current. The exact format for these factors and how they can best be matched to the code structures we have developed must still be determined. Last, through increased use and access to larger data bases that could provide at least pieces of the prototype that could be said to be nationally representative, it may be possible to build generic models that will increase our knowledge of how districts convert monetary resources in education production ingredients. Conceivably, such data could assist the school districts of the nation to consider ways in which that might deliver their education products in an increasingly efficient manner.

FOOTNOTES

<1>We were unable to obtain exact enrollments or other descriptive information due to the AAA's requirement to maintain the anonymity of these districts.

<2>Cost data for books were deleted from all of the districts at the district administration level. In addition, several other equipment categories that appeared under

administration that did not seem to apply to adminstration and which were not uniformly included across all four districts were deleted from these files. The equipment categories deleted from the central administration equipment files, with the number of districts in which they appeared, follows: Musical Instruments (2), Lab Equipment (3), Stage/Auditorium (1) and Vehicles (1). Each of these items was divided by its estimated life to derive an annualized cost. The sum of these annualized costs is shown in Column (3) for each of the four districts.

<3>All of these estimates are based on a ratio of 21 between the total number of square feet of floor space in the building and the total perimeter of the building. An example given by AAA to illustrate this ratio is a three story building with floor dimensions of 80 by 120 feet on each floor. As the total area of this building is 28,800 square feet (9600 X 3) and the total perimeter is 1,200 ((80 + 80 + 120 + 120) X 3), the ratio for this building is 28,800 to 1,200, or 24. A standard ratio of 21 will be used throughout this study as this is a midpoint ratio found throughout all of the building prototypes shown in Table 6-8.]

<4>AAA uses the following standards to estimate normal life for school buildings:

Steel frame fireproof class A	45 Avg.
Steel frame concrete class B	45 Avg.
Masonry & concrete class C	40 Avg.
Wood frame class D	35 Avg.
Steel frame class S	35 Avg.

CHAPTER 7

SUMMARY AND CONCLUDING REMARKS

The RCM System is much more than a process for measuring educational costs or setting school district budgets. It is a resource allocation tool that allows a broad range of constituents in the participating agency to consider how resources can be allocated equitably and used most efficiently. This approach accommodates the political orientation inevitable in all public allocation decisions. It provides an approach to cost and expenditure analysis that is program based has great flexibility and is not subject to the compatibility problems facing accounting oriented approaches. The process offers the potential to bring educators, resource management personnel and educational policy makers together to consider the most effective allocations of available resources. The RCM process begins with an accurate reflection of existing patterns of resource allocation, and from this information, it provides policy makers with a foundation upon which to consider what resources SHOULD be assigned to educational programs. In an era of concern over what constitutes "basic" education, the RCM requires the precise definition of service levels for all educational programs. It allows the unique educational priorities of each user agency to surface. The RCM forces competing and complementary interests and needs across educational programs to be considered in relation to one another.

The RCM System can also be updated annually with relative ease. At the state level, this represents a significant improvement to the common practice of relying on "legislative patchwork" to update the state funding formula. In the words of Robert Jamieson, Chairman of the Illinois Public School Finance Project, "We've got to get away from going before the General Assembly every year and putting the educational needs of the state up for auction without taking into consideration the costs and needs of education."<1>

For school district applications, the RCM System provides an important information base for facilitating the budgeting and planning decisions continually confronting educational organizations. Twenty years ago H. Thomas James, former Dean of the Stanford University College of Education, described a situation with which education agencies still struggle: "increases in the total (school) budget are (not) allocated . . . on a selective basis, but on a flat percentage-increase basis; available at the policy-making level to provide a more rational basis for allocating funds."<2> The RCM is a computer-assisted decision making model designed specifically to provide the cost data needed to make selective allocations in public education settings.

The RCM System provides an information base which is easily accessible to the educational decision maker through the RCM computer software program. It provides a structure in which educators, school business officials, community members, and policy makers can work together to establish standards of educational service. At the state level, the data produced by this process fully account for the costs and needs of educational programs and can serve as the basis for state aid allocations. At the local level, these data provide a basis for rationally allocating funds and making planning decisions. In both instances, the RCM computer model protects against the obsolescence of the data base by allowing annual revisions to be made with relative ease. The RCM represents a fairly low-cost, highly participatory approach for improving the quality of information for educational decision making. The development of an innovation for taking the guess work out of school finance seems especially timely in this era of educational reform.

FOOTNOTES TO CHAPTER 7

<1> Don Sevener, "Illinois Panel Uses 'State-of-the-Art' Approach in School-Finance Plan," *Education Week*, September 14, 1983, p. 5.

<2> H. Thomas James, "Modernizing State and Local Financing in Education," in *A Financial Program For Today's Schools* (Washington, D.C.: National Education Association Committee on Educational Finance, 1964), pp. 56-57.

BIBLIOGRAPHY

Augenblick, John and Adams, Kathleen. "An Analysis of the Impact of Changes in the Funding of Elementary/Secondary Education in Texas: 1974/75 to 1977/78." Denver, Colo.: Education Commission of the States, (1979).

Bardach, Eugene. The Implementation Game. Cambridge, Massachusetts: 1977.

Berke, Joel S. Answers to Inequity. Berkeley: 1974.

Berke, Joel S. and Robert J. Goettel. "Constraints to Meaningful Reform in School Finance." Theory Into Practice 11 (April 1972), pp. 117-125.

Berke, Joel S. and others. Financing Equal Educational Opportunity: Alternatives for State Finance. Berkeley, California: McCutchan Publishing Corporation, 1972.

Berman, Paul and McLaughlin, Milbrey. Federal Programs Supporting Educational Change, Findings in Review. Prepared for H.E.W. Santa Monica, California: Rand Corporation, [April, 1975].

Busselle, Tish Newman. The Texas Weighted Pupil Study. Austin, Texas: Texas Education Agency (1973).

Chambers, Jay G. "Patterns of Compensation of Public and Private School Teachers." Economics of Education Review, Vol.4, No. 4, (1985): 291-300.

Chambers, Jay G. "Cost and Price Level Adjustments to State Aid for Education: A Theoretical and Empirical Review." Perspectives in State School Support Programs. Edited by K. Forbis Jordan), Second Annual Yearbook of the American Educational Finance Association. Ballinger Publishing Co.: 1981.

Chambers, Jay G. The Development of a Cost-of-Education Index for the State of California, Final Report, Parts 1 and 2. Prepared for the California State Department of Education, December 1980. Stanford, California: Institute for Research on Educational Finance and Governance, Stanford University, Report No. 81-B3, March 1981.

Chambers, Jay G. "The Development of a Cost of Education Index: Some Empirical Estimates and Policy Issues." Journal of Education Finance 5(3) Winter 1980.

Chambers, Jay G. "A Reply to Matthews and Brown, The Development of a Cost of Education Index: Some Empirical Estimates and Policy Issues." *Journal of Education Finance* 6 (2) (1980).

Chambers, Jay G. *Educational Cost Differentials Across School Districts in California.* Report prepared under subcontract to the Education Finance Center of the Education Commission of the States for the School Finance Equalization Project of the California State Department of Education, September 1978.

Chambers, Jay G. Educational Cost Differentials and the Allocation of State Aid for Elementary/Secondary Education." *The Journal of Human Resources* (Fall 1978).

Chambers, Jay G. "An Analysis of Resource Allocation in Public School Districts." *Public Finance Quarterly*, 6(2), (April 1978).

Chambers, Jay G. "An Analysis of Educational Costs Across Local School Districts in the State of Missouri, 1975-76." In *Educational Finance*, No. 7. Denver, Co.: Education Commission of the States, January 1978.

Chambers, Jay G. *The Development of an Educational Cost Index: Some Final Comments Based on a Study of Educational Costs in the State of Missouri.* Prepared for the Educational Finance Committee of the Governor's Conference on Education in Missouri, November 1976.

Chambers, Jay G. and Hartman, William T. *Special Education Policies: Their History, Implementation and Finance*. Edited by Jay G. Chambers and William T. Hartman. Philadelphia: Temple University Press, 1983.

Chambers, Jay G. and O'Brien, Joan. *Cost Consequences of Changes in the Demographics of the Educational Workforce for Local Public School Districts.* Prepared under a grant received by the Institute for Research on Educational Finance and Governance from the Ford Foundation. Stanford, California: Institute for Research on Educational Finance and Governance, Stanford University, Report No. 82-B10, December 1982.

Chambers, Jay G. and Parrish, Thomas B. *Education Program Costs in Connecticut: A Demonstration Project for the Application of the AEFP/RCM System*. Final Report and Addendums. Prepared for the Office of Legislative Research, State of Connecticut. Mountain View, California: Associates for Education Finance and Planning, Inc., January 1986.

Chambers, Jay G. and Parrish, Thomas B. An Overview of the AEFP/RCM System: A Resource Cost Model Approach to Resource Management in Education and Social Service Agencies. Mountain View, California: Associates for Education Finance and Planning, Inc., January 1986.

Chambers, Jay G. and Parrish, Thomas B. The Costs for Services Provided to Individuals with Exceptional Needs in California Nonpublic, Nonsectarian Schools, Final Report. Prepared for the California State Department of Education Special Education Division Field-Initiated Special Study. Mountain View, California: Associates for Education Finance and Planning, Inc. (and CAPSES), July 1985.

Chambers, Jay G. and Parrish, Thomas B. The Development of a Program Cost Model and a Cost-of-Education Index for the State of Alaska: Final Report, Volumes I-IV. Stanford, California: Associates for Education Finance and Planning, Inc., December 1984.

Chambers, Jay G. and Parrish, Thomas B. and Brackett, John The Legacy of Rational Education Budgeting Models In Light of a Proposal for the Future. Stanford, California: Institute for Research on Educational Finance and Governance, Stanford University, Report 83-A21, March 1983.

Chambers, Jay G. and Parrish, Thomas B. Adequacy and Equity in State School Finance and Planning: A Resource Cost Model Approach. Stanford, California: Institute for Research on Educational Finance and Governance, Stanford University, March 1983.

Chambers, Jay G. and Parrish, Thomas B. The Development of a Program Cost Model and a Cost-of-Education Model for the State of Alaska. In Response to RFP OPR 83-3. Part I: Technical Proposal. Stanford, California: Associates for Education Finance and Planning, April 29, 1983.

Chambers, Jay G. and Parrish, Thomas B. The Development of a Program Cost Model and a Cost-of-Education Model for the State of Alaska: A Preliminary Report. Stanford, California: Associates for Education Finance and Planning, December 15, 1983.

Chambers, Jay G. and Parrish, Thomas B. "Deriving Cost-Based State School Finance Formulae," Educational Comment/1983, University of Toledo.

Chambers, Jay G. and Parrish, Thomas B. The Development of a Resource Cost Model Funding Base For Education Finance in Illinois, Volume I--Executive Summary and Volume II--Technical Report. Prepared for the Illinois State Board of Education. Stanford, California: Associates for Education Finance and Planning, December 1982.

Chambers. Jay G. and Parrish, Thomas B. *The Issue of Adequacy in the Financing of Public Education: How Much is Enough?* Stanford, California: Institute for Research on Education Finance and Governance, Stanford University, Report No. 82-A19, July, 1982.

Chambers, Jay G. and Parrish, Thomas B. *An Update of the Florida Cost-of-Education Index, for the Office of Educational Planning, Budgeting, and Evaluation, Florida Dept. of Education*. November, 1981.

Decision Resources Corporation. "Expenditures for Special Education: Implications for a National Study," Washington, DC: Author, 1984.

Friedman, Lee S. and Wiseman, Michael. "Understanding the Equity Consequences of School Finance Reform," *Harvard Educational Review* Vol. 48, No. 2., Pp. 193/226.

Ginsburg, Alan, Moskowitz, Jay H. and Rosenthal, Alvin S. "A School Based Analysis of Inter- and Intradistrict Resource Allocation," *Journal of Education Finance* Vol. 6, No. 4. Pp. 440-445.

Harder, Joseph C. "Adequacy and Equity in School Finance," *Compact*, Spring, 1976.

Hartman, William, *Projecting Special Education Costs*. Stanford, California: Institute for Research on Educational Finance and Governance, Publication 81-B8, June 1981.

Hartman, William. *Major Policy Issues in Financing Special Education Programs.* Washington D.C.: National Institute of Education, School Finance Study (1979).

Hartman, William. *Estimating the Costs of Educating Handicapped Children: A Resource-Cost Model Approach*. (Ph.D. dissertation, Stanford University, 1979.

Hartman, William. "Policy Effects of Special Education Funding Formulas." *Journal of Education Finance* 6 (Fall 1980):135-159.

Johns, Roe L. *Full State Funding of Education, Evolution and Implications*. University of Pittsburg Press, 1973.

Jordan, Forbis K. and McKeown, Mary P. "Equity in Financing Public Elementary and Secondary Schools," in *School Finance Policies and Practices, The 1980's: A Decade of Conflict*. Edited by James W. Guthrie. Cambridge, Massachusetts, 1980.

Kakalik, J., Furry, W., Thomas, M. and Carney, M. *The Cost of Special Education*. Santa Monica, California: Rand Corporation, 1981.

Kakalik, James S. *Policy Issues in Cost and Finance of Special Education.* Santa Monica, Ca.: The Rand Corporation (1977).

Kakalik, James S., Brewer, Garry D., Dougherty, L.A., Fleischauer, F.D., and Genensky, S.M. *Services for Handicapped Youth: A Program Overview*, Report R-1210-HEW, Santa Monica, CA: Rand Corporation, 1973.

Kirst, Michael. "Coalition Building for School Finance Reform: The Case of California," in *Journal of Educational Finance* (Summer 1978): Pp. 29-45.

Lehne, Richard. *The Quest for Justice: The Politics of School Finance Reform*. New York, 1978.

Levin, Henry M. *Cost-Effectiveness: A Primer, New Perspectives in Education,* Volume 4. Beverly Hills, California: Sage Publications, 1983.

Levin, Henry M. "Equal Educational Opportunity and the Distribution of Educational Expenditures," *Education and Urban Society* (February 1973): Pp. 149-176.

McGuire, Kent C. "State and Federal Programs for Elementary/Secondary School Students with Special Needs." Education Commission of the States. Denver, 1981.

Milne, A., Moskowitz, J. and Ellman, F., *Serving Special Needs Children: The State Approach*, Washington, DC: Decision Resources Corporation, 1982.

Miner, Jerry. *Social and Economic Factors in Spending for Public Education*. Syracuse, New York: Syracuse University Press, 1963.

Odden, Allan, and Augenblick, John. "School Finance Reform in the States: 1981." Education Commission of the States, January, 1981

Pressman, Jeffrey L. and Wildavsky, Aaron B. *Implementation*. Berkeley, 1973.

Rossmiller, Richard A. "Program Patterns and Expenditures for Special Education in Smaller School Districts," *Journal of Education Finance*, (Spring 1982).

Rossmiller, Richard A. "Financing Educational Programs for Handicapped Children." *Financing Educational Programs for Handicapped Children* Edited by Nancy Cain. Denver, Colo.: Education Commission of the States (1974).

Rossmiller, Richard A., and Moran, Thomas. "Programmatic Cost Differentials for Delaware School Districts." Gainesville, Fla.: National Educational Finance Project (1973).

Rossmiller, Richard A., and Hale, James A. . *Educational Programs for Exceptional Children: Resource Configurations and Costs.* Edited by Lloyd Frohreich. Madison, Wis.: Department of Educational Administration, University of Wisconsin (1970).

Schrag, Judy A. *A Study of Exceptional Children in Idaho: Special Education Needs Assessment Study.* Boise, Idaho: Department of Public Instruction (1974).

Staub, W. Frederick. "Court Decisions and the Financing of Education." *Theory Into Practice* 11 (April 1972), Pp. 84-87.

Stern, David. "Effects of Alternative State Aid Formulas on the Distribution of Public School Expenditures in Massachusetts", *Review of Economics and Statistics* Vol. 55 (February 1973): 91-97.

Strahan, Richard Dobbs. *The Courts and The Schools*. Lincoln, Nebraska: Professional Education Publications, Inc., 1973.

Strayer, George D. and Haig, Robert M. *Financing of Education in the State of New York*. New York: MacMillan, 1923.

U.S. Department of Education. Sixth Annual Report to Congress on the Implementation of Public Law 94-142: The Education for All Handicapped Children Act, 1984.

Wise, Arthur E., *Rich Schools, Poor Schools*. Chicago, 1968.

APPENDIX A
STRATEGIC PLANNING
A SAMPLE PROGRAM PLAN

PROGRAM: VOCATIONAL EDUCATION

PRIMARY MISSION: PROVIDE PROGRAMS THAT EXPLORE VARIOUS OCCUPATIONS AND TEACH RELEVANT JOB SKILLS, IN COOPERATION WITH THE REGIONAL OCCUPATIONAL PROGRAM.

PROGRAM DESCRIPTION:

Vocational Education: Vocational Education provides funds for instructional programs that provide students with sufficient skills and knowledge to enter productive, satisfying careers and advance in them, and to assist students to develop informed, meaningful occupational choices. The vocational programs may include courses in agriculture, business, homemaking and consumer education, and industrial arts.

Regional Occupational Program: The primary purpose of the Regional Occupational Program (R.O.P.) is to provide high quality vocational and technical job training through teaching marketable job skills. R.O.P. works in cooperation with local businesses in the community to provide students with on-the-job training on currently used equipment. Individuals from business and industry are involved in an advisory capacity to ensure meaningful occupational skill training. R.O.P. offers 16 different programs.

TRENDS:

1 LABOR MARKET NEEDS WILL BE OVERWHELMING IN THE 80'S SO BUSINESS WILL TAKE A GREATER INTEREST IN EDUCATION

2 EDUCATION CAN'T AFFORD TO BUILD AND FULLY EQUIP VOCATIONAL EDUCATION FACILITIES, SO IT WILL EXPAND INTO THE COMMUNITY

3 BUSINESS AND INDUSTRY WILL CONTINUE TO LOOK FOR A STRONG EMPHASIS ON THE BASICS AND THE WORK ETHIC

4 THERE WILL BE MORE PRIVATE TECHNICAL SCHOOLS AND TRAINING BY INDUSTRY ITSELF

5 THE HIGH TECHNOLOGY INDUSTRIES WILL CONTINUE TO FACE A SHORTAGE IN PERSONNEL BUT PREFER TO TRAIN THEM THEMSELVES

6 THE INCREASED GRADUATION REQUIREMENTS WILL REDUCE THE NUMBER OF VOCATIONAL PROGRAMS OFFERED AND TAKEN

7 THE GREATER EMPHASIS ON ACADEMICS WILL FORCE OUT THE MARGINAL STUDENT THEREBY INCREASING THE NUMBER OF STUDENTS NEEDING JOB SKILLS WITH WHICH TO ENTER THE JOB MARKET

8 WORK EXPERIENCE WILL CONTINUE TO BE AN ESSENTIAL COMPONENT OF THE VOCATIONAL PROGRAM

9 THERE WILL CONTINUE TO BE A RESTRICTION ON THE GROWTH OF ROP PROGRAMS

10 ALTHOUGH THERE WILL BE GROWTH IN THE NUMBER OF VINEYARDS AND WINERIES, THE OVERALL NUMBER OF JOBS IN AGRICULTURE WILL REMAIN ESSENTIALLY THE SAME

11 THERE WILL BE MORE RECREATION AND TOURIST RELATED JOBS IN THE COUNTY

12 THERE WILL BE A SIGNIFICANT NUMBER OF HIGH TECH, COMPUTER RELATED JOBS CREATED IN THE COUNTY

CURRENT RESOURCES ALLOCATED:

VOCATIONAL EDUCATION

Students Served	Program	Students	Periods
	Agriculture	403	10
	Industrial Arts	1670	36
	Business	2049	44
	Consumer Education	909	22

Staff	Certificated	Agriculture	3
		Industrial Arts	11
		Business	12
		Consumer Education	6
		Coordinator	.2
	Classified	Secretary	.5

Budget	Total Expense	1,663,973

ROP

Students Served		316
Staff	Total Certificated	16.67
	Total Classified	1.00
Budget	Total Expense	607,680

MARKET RESULTS:

HIGH SCHOOL GRADUATE FOLLOW-UP STUDY

Description of Present Job Situation		
In an apprenticeship program	5	7%
Receiving on-the-job training	26	34%
In a job I am fully qualified for	45	59%

Statement that best describes the job		
In a field in which I received specific high school training	10	13%
In a field related to my high school training	16	20%
In a Field unrelated to my high school training	53	67%

THREE YEAR PROJECTION:

- Provide programs that lead to relevant job skills.

- Provide a limited amount of occupational exploratory programs.

TASKS TO BE ACCOMPLISHED IN 1985-86:

1.5.1 Develop identified vocational education programs as alternatives to graduation requirements and meeting academic competencies.

1.5.2 Develop identified programs to meet relevant job skills based on State competencies with local emphasis.

1.5.3 Review the home economics programs to determine which should be recommended for continuance.

1.5.4 Move the work experience program to the vocational education program.

1.5.5 Move vocational agriculture to the alternative education program as an agriculture science elective.

OBJECTIVES FOR 1985-86:

1.5.1 By September 30, 1985, the vocational educational coordinator will establish a task force to study programs as alternatives to graduation requirements for meeting academic competencies.

By January 30, 1986, the task force will identify vocational programs as alternatives to graduation requirements for meeting academic competencies. This objective will be accomplished when the report is submitted to the Principals and the Superintendent for recommendations to the Board.

STAFF REQUIRED: Vocational Ed Coord   BUDGET REQUIRED: $3,600
12 Teachers

1.5.2 By January 30, 1986, the Vocational Education departments will meet with their advisory committees to establish skill competencies for students completing the vocational programs. Needed competencies will be implemented by June 1986, into the vocational curriculum.

STAFF REQUIRED: Vocational Ed Coord   BUDGET REQUIRED: 0
Dept chairs
Advisory committees

1.5.3 By July 1, 1985, the Vocational Education Coordinator will recommend to the Superintendent the competency based curriculum to be implemented by the fall of 1986, in Home Economics and related occupations.

STAFF REQUIRED: Vocational Ed Coord   BUDGET REQUIRED: 0

1.5.4. By September 1985, the work experience program will be part of the Vocational Education program.

STAFF REQUIRED: Work Experience Teacher   BUDGET REQUIRED: 0

1.5.5 By September 1985, vocational agriculture will be an elective in the Alternative Education program as an agriculture science elective.

STAFF REQUIRED: Ag Task Force   BUDGET REQUIRED: 0

PROGRAM: SCHOOL IMPROVEMENT

PRIMARY MISSION: TO PROVIDE RIGOROUS ACADEMIC PROGRAMS IN AREAS REQUIRED BY LAW, STATE GUIDELINES, AND THE LOCAL COMMUNITY, WHILE ATTEMPTING TO MAXIMIZE THE RESOURCES AVAILABLE TO THE DISTRICT.

TRENDS:

-THERE WILL BE INCREASED EMPHASIS ON ACADEMIC EXCELLENCE AND REQUIRED ACADEMIC COURSES.

-THERE WILL CONTINUE TO BE COMPETITION FOR THE AVAILABLE EDUCATIONAL FUNDS FROM WITHIN THE EDUCATIONAL COMMUNITY, PARTICULARLY FROM SPECIAL INTEREST GROUPS.

-REFORMS WILL CONTINUE TO BE THE PRICE FOR INCREASED SCHOOL AID OVER THE COST OF LIVING INFLATION FACTOR.

-IT WILL CONTINUE TO BE IMPORTANT TO GET PARENTS TO PARTICIPATE IN THE EDUCATION OF THEIR CHILDREN.

PROGRAM DESCRIPTION:
All seven elementary schools run a K-5 program with new plans based on new effective schools criteria. Inservice for 1984-85, including training and program reviews, will be conducted at state expense by the LA MCD DO consortium. Ninety-five percent of School Improvement funds are spent on aide salaries to support highly structured reading and mathematics programs. The Director of Instruction provides inservice and support for the program.

MAJOR FUNCTIONS:
a) Helps teacher (through aides) maintain heavy paper-load basic skills program.
b) Serves to reinforce implementation of district curriculum.
c) Sends some teachers and administrators into other districts to review programs.
d) Provides some limited release time, staff development, and instructional materials.

NUMBER OF STUDENTS SERVED: 2,426 students, 89 teachers

NUMBER OF STAFF: CERTIFICATED 0
CLASSIFIED 15.38 instructional aides

BUDGET:

EXPENDITURES		REVENUES	
Personnel Costs	$241,191.	Categorical	$247,691
Other Expenses	6,500.		
	---------		---------
Total Expenses	$247,691.	Total Revenue	$247,691

PROGRAM MANAGER: Director of Instruction

3-5 YEAR DIRECTIONS:

Allow local schools the choice on the allocation of resources to enhance the instructional program.

TASKS TO BE ACCOMPLISHED IN 1985-86:

1) Assist the site councils in the resource allocation process by reviewing alternative allocation models.

a) Assist school with alternative models by holding inservices to review allocation of resources and identifying alternative models.

Responsibility - Dir of Ed
Completion Date - Feb. 1986

2) Consider the implementation of the outcome of the compliance review.

   a) Assist schools in developing budget control, especially in the number of positions filled.

      Responsibility - Asst Supt Bus
      Completion Date - Sept 1985